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STIHL

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1. INTRODUCTION

This service manual contains detailed descriptions of all the repair and servicing procedures specific to this series of chainsaws There are separate handbooks for servicing procedures on standardized parts and assemblies that are installed in several STIHL power tool models. Reference is made to these handbooks in the appropriate chapters of this manual.

You should make use of the illustrated parts lists while carrying out repair work. They show the installed positions of the individual components and assemblies.

Always use the latest edition of the parts list to determine the part numbers of any replacement parts required. Microfilmed parts list are always more up to date than printed lists.

A fault on the machine may have several causes. Consult the troubleshooting charts for all assemblies in the "Standard Repairs, Troubleshooting" handbook.

Refer to the "Technical Information" bulletins for engineering changes which have been introduced since publication of this service manual. Technical information bulletins also supplement the parts list until a revised edition is issued.

Special servicing tools mentioned in the descriptions are listed in the last chapter of this manual. Use the part numbers to identify the tools in the "STIHL Special Tools" manual. The manual lists all special servicing tools currently available from STIHL. Symbols are included in the text and pictures for greater clarity. The meanings are as follows:

In the descriptions:

• = Action to be taken as shown in the illustration (above the text)

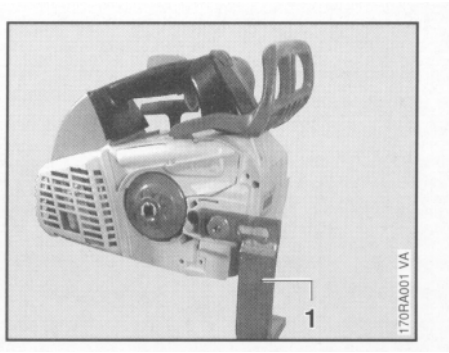
- = Action to be taken that is not shown in the illustration (above the text)

In the illustrations:

➡ = Pointer

→ = Direction of movement

Service manuals and all technical information bulletins describing engineering changes are intended exclusively for the use of STIHL servicing dealers. They must not be passed to third parties.



Servicing and repairs are made considerably easier if the powerhead is mounted to the assembly stand (1) 5910 890 3100.

This enables the powerhead to be swivelled to the best position for the ongoing repair and leaves both hands free.

It is secured with the bar mounting stud after removing the chain sprocket cover and tensioner.

Always use original STIHL replacement parts. They can be identified by the STIHL part number, the STIHL logo and the STIHL parts symbol The symbol may appear alone on small parts.

2. SPECIFICATIONS

2.1 Engine

STIHL single cylinder two-stroke engine with special impregnated cylinder bore

Displacement:	35.2 cm^3 (2.15 cu.in)
Bore:	40 mm (1.57 in)
Stroke:	28 mm (1.10 in)
Engine power to ISO 8893:	1.2 kW (1.6 bhp)
Max. engine speed with bar and chain:	12,000 rpm
Idle speed:	2,800 rpm
Bearings:	Crankshaft supported in heavy-duty ball bearings, needle cages on small and big ends
Piston pin diameter:	8 mm (0.3 in)
Connecting rod length:	51 mm (2 in)
Rewind starter:	Single pawl system
Reserve pull on rope rotor:	min. 1/2 turn
Starter rope:	3.0 mm (0.12 in) dia., 800 mm (31.5 in) long
Clutch:	Centrifugal clutch without linings
Diameter:	64 mm (2.52 in)
Clutch engages at:	3,700 rpm
Crankcase leakage test at gauge pressure:	0.5 bar (7.25 psi)
under vacuum:	0.4 bar (5.8 psi)

2.2 Fuel System

Carburetor:	Diaphragm carburetor
Standard setting	
High speed screw H:	Open approx. 1 turn
Low speed screw L:	Open approx. 1 turn
Carburetor leakage test at gauge pressure:	0.4 bar (4.8 psi)
Fuel tank capacity:	0.29 l (0.61 US pt)
Octane number:	min. 90 RON (US/CAN: pump octane min. 87 unleaded)
Fuel mixture:	Regular brand-name gasoline and two-stroke engine oil
Mix ratio:	**1:50** with STIHL 50:1 two-stroke engine oil **25:1** with other brand-name two-stroke, air-cooled engine oils
Air filter:	Felt element

2.3	**Ignition System**	Type:	Electronic magneto ignition (breakerless) with integral trigger unit
		Air gap:	0.25 mm (0.010 in)
		Ignition timing:	1.6 - 2.3 mm (0.063-0.091 in) B.T.D.C. at 8,000 rpm
		Spark plug (suppressed):	NGK BPMR 7 A or CHAMPION RCJ6Y
		Electrode gap:	0.5 mm (0.02 in)
		Spark plug thread:	M14x1.25
		Length of thread:	9.5 mm (0.37 in)
2.4	**Cutting Attachment**		
		Oilomatic chain:	9.32 mm (3/8") Picco-Micro-Mini
		Chain sprocket:	7-tooth 3/8" P spur sprocket
		Chain speed:	21.7 m/s (71.2 ft/sec) at 10,000 rpm
		Chain lubrication:	Speed-controlled reciprocating oil pump. No oil feed at idle speed
		Oil delivery rate:	Adjustable 5 - 9 cm^3/min (0.17 - 0.30 fl.oz/min)
		Oil tank capacity:	0.16 l (0.34 US pt)
2.5	**Special Accessories**		
2.5.1	**For User**	STIHL repair kit	1132 900 5000
		6-tooth 3/8" P spur sprocket	1123 640 2005
		8-tooth 1/4" spur sprocket	1123 640 2010
		ElastoStart	0000 190 3400
2.5.2	**For Service**	Carburetor parts kit	1132 007 1060

2.6 Tightening Torques

Plastoform screws are used for polymer components and "DG" screws for lightmetal components. These screws form a permanent thread when they are installed for the first time. They can be removed and installed as often as necessary without detrimentally affecting the strength of the screwed assembly, providing the specified tightening torque is observed. For this reason it is **essential to use a torque wrench.**

Fastener	Thread size	For component	Torque Nm	lbf.ft	Remarks
Spline screw	IS-DG 4x20	Ignition module/cylinder	4.5	3.3	
Spline screw	IS-DG 5x24	Handle molding/front handle	3.5	2.6	
Spline screw	IS-DG 5x24	Fan housing/engine housing	4.0	3.0	
Spline screw	IS-DG 5x24	Engine pan/cylinder	8.0	5.9	
Spline screw	IS-DG 5x24	Handle molding/handle	4.0	3.0	
Spline screw	IS-DG 5x24	Muffler/cylinder	7.0	5.2	
Spline screw	IS-DG 5x24	Spacer flange/cylinder	8.0	5.9	
Spline screw	IS-DG 5x24	Engine housing/cylinder	8.0	5.9	
Collar screw	IS-DG 8x18	Bar mounting/engine housing	16.0	11.8	
Spline screw	IS-M5x52	Intake casing/carburetor/flange	5.0	3.7	
Collar nut	M8x1	Flywheel	28.0	21.0	
	M12x1 L	Clutch	50.0	37.0	
	M14x1.25	Spark plug	25.0	18.5	
Plastoform screw	IS-P4x12	Hand guard, left/fan housing	1.7	1.3	
Screw	IS-DG 3.5x12	Support plate /diaphragm/ spacer flange	2.0	1.5	

Use the following procedure when refitting a P or DG screw in an existing thread:

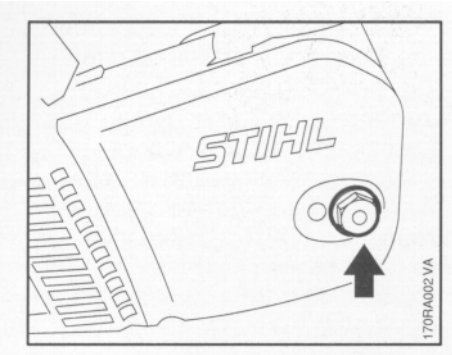
- Place the screw in the hole and rotate it counterclockwise until it drops down slightly.
- Tighten the screw clockwise to the specified torque.

This procedure ensures that the screw engages properly in the existing thread and does not form a new thread and weaken the joint.

Note: Power screwdriver speed for use in polymer: Plastoform screws max. 600 rpm,
DG screws max. 500 rpm.
Use only screws specified in parts list.
Do not use screws with underhead locking teeth on polymer components.

3. CLUTCH, CHAIN DRIVE, CHAIN BRAKE AND CHAIN TENSIONER

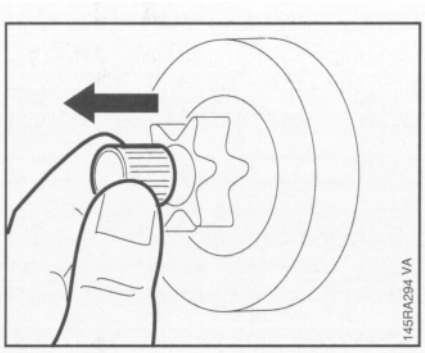
3.1 Chain Sprocket



• Unscrew the nut.

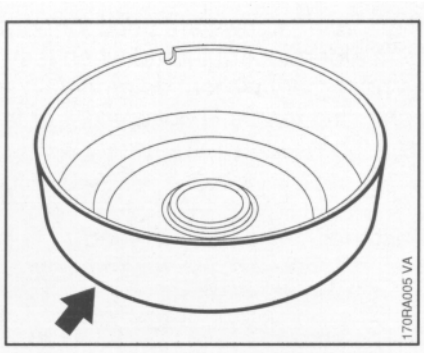
- Pull off the chain sprocket cover.

- Disengage the chain brake by pulling the hand guard toward the front handle.



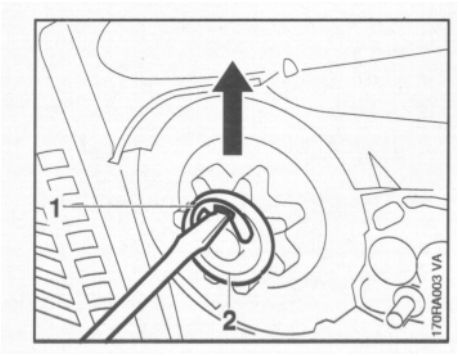
• Take the needle cage out of the sprocket.

- Clean and inspect the chain sprocket.



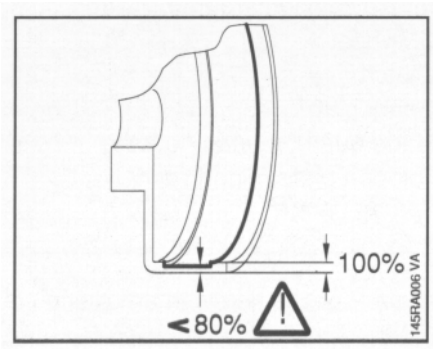
• If the clutch drum is still serviceable, use No. 120 emery paper or emery cloth (grain size approx. 120µm) to clean and roughen its friction surface.

Reassemble in the reverse sequence.



• Remove the E-clip (1).

• Remove the washer (2).



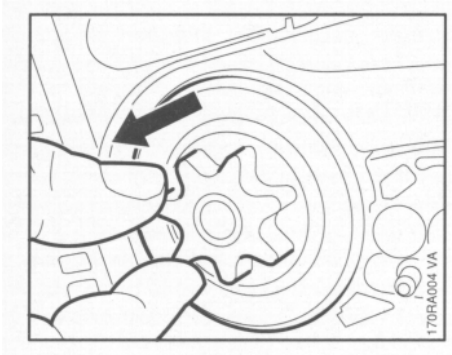
Important: If there are noticeable wear marks on the inside diameter of the clutch drum, check its wall thickness. If it is less than 80% of the original wall thickness, fit a new sprocket.

Note: If the clutch drum has to be replaced, also check the brake band - see 3.3.2.

- Clean stub of crankshaft. Wash needle cage in clean white spirit and lubricate with grease - see 11.2.

- Replace damaged needle cage.

- Rotate chain sprocket and apply slight pressure at the same same until oil pump drive spring engages properly.

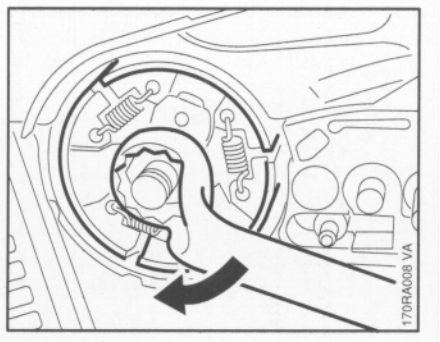


• Pull off the chain sprocket.

3.2 Clutch

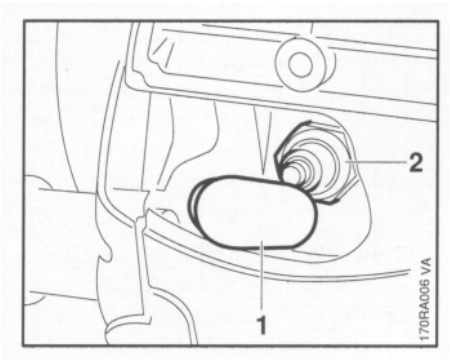
Troubleshooting chart - see "Standard Repairs, Troubleshooting" handbook.

- Remove chain sprocket - see 3.1.



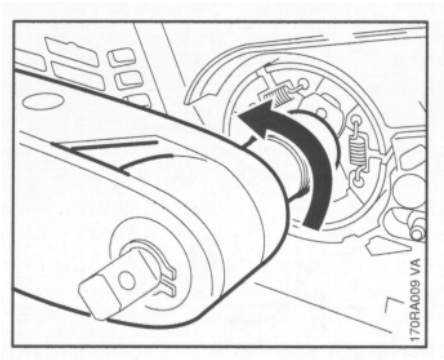
- Unscrew the clutch from the crankshaft in the direction of the arrow (left-hand thread).

- Disassemble and reassemble the clutch - see "Standard Repairs, Troubleshooting" handbook.



- Pull boot (1) off the spark plug.

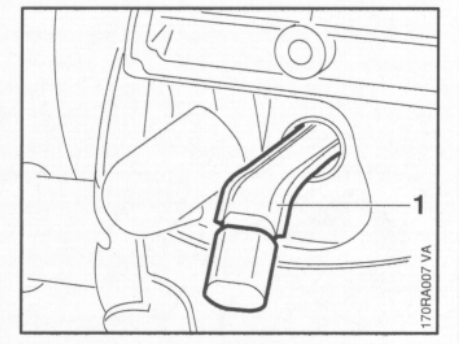
- Unscrew the spark plug (2).



- Screw clutch onto crankshaft and torque down to 50 Nm (37 lbf.ft).

- Remove locking strip from cylinder.

- Install spark plug and torque down to 25 Nm (18.5 lbf.ft).



- Push the locking strip (1) 0000 893 5903 into the cylinder.

Important: If spark plug has a separate terminal nut, make sure that it is properly tightened down.

- Fit spark plug boot.

- Install the chain sprocket - see 3.1.

3.3 Chain Brake

3.3.1 Checking Function

The chain brake is one of the most important safety devices on the chainsaw. Its efficiency is measured in terms of braking time, i.e. the time that elapses between activating the brake and the saw chain coming to a standstill. The shorter the braking time, the better the efficiency and protection offered against being injured by the rotating chain.

Contamination (with chain oil, chips, fine particles of abrasion, etc.) and smoothing of the friction surfaces of the brake band and clutch drum impair the coefficient of friction. This, in turn, reduces the frictional forces and thus prolongs the braking time. A fatigued or stretched brake spring has the same negative effect.

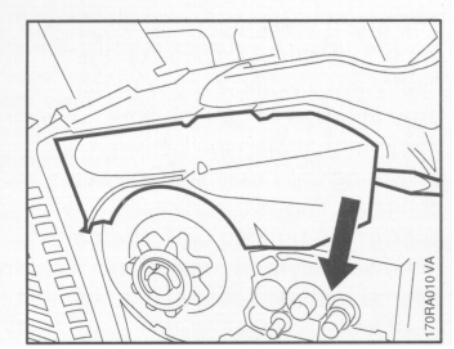
- Start the engine.

- With the chain brake activated (locked), open throttle wide for brief period (max. 3 seconds) the chain must not rotate.

- With the chain brake released, open throttle wide and activate the brake manually - the chain must come to an abrupt stop.

Note: The braking time is in order if deceleration of the saw chain is imperceptible to the eye.

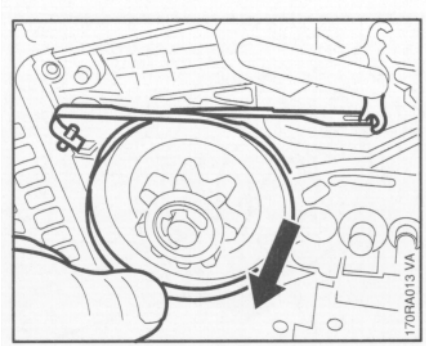
3.3.2 Disassembly



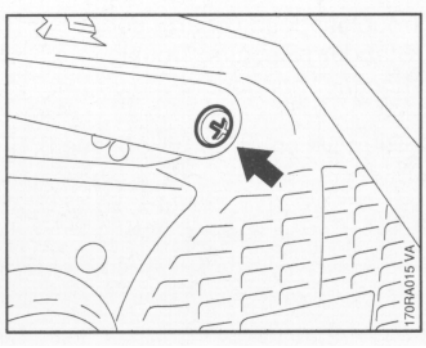
- Release tension of brake spring by pushing the hand guard forwards.

- Remove chain sprocket cover.

• Ease the cover out of its retainers.

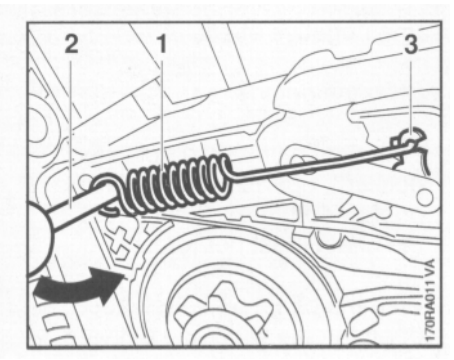


• Remove brake band from the chain sprocket and detach it from the bell crank.



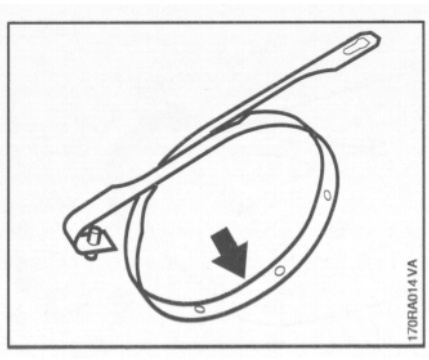
• Take out the screw.

- Remove the hand guard from its seat on the fan housing.



• Use assembly tool (2) 1117 890 0900 to carefully disconnect the brake spring (1).

• Unhook the brake spring from the bell crank (3).



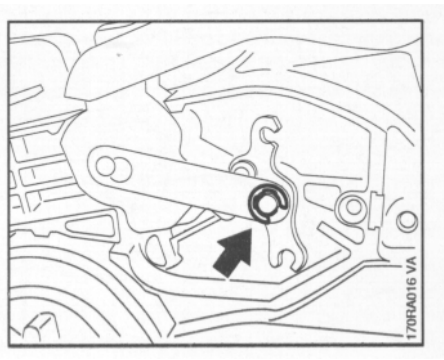
Replace the brake band if:

- there are noticeable signs of wear (large areas on inside diameter and/or parts of outside diameter) and

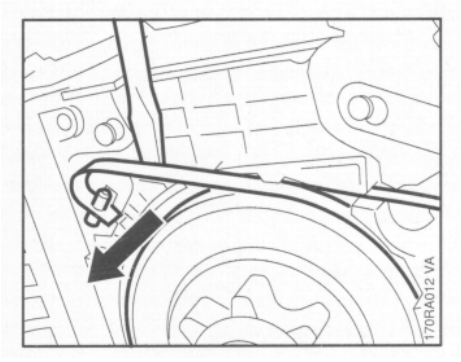
- its remaining thickness is less than 0.6 mm (0.024").

Important! Thickness of brake band must not be less at **any** point.

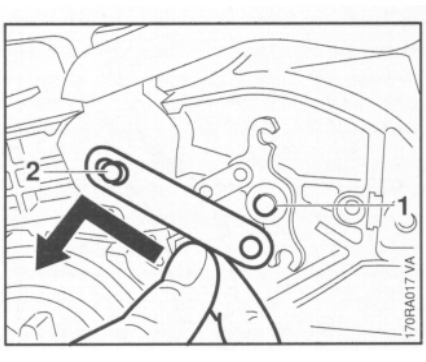
• If the brake band is still serviceable, use No. 120 emery paper or emery cloth (grain size approx. 120µm) to clean and roughen its entire friction surface (inside diameter).



• Remove the E-clip,

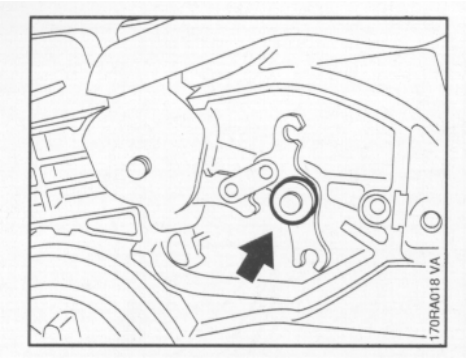


• Lever the brake band out of the engine housing.



• Slip the strap off the bell crank pivot pin (1).

• Push the strap to one side and remove it from the hand guard pivot pin (2).



- Clean chain brake seat in housing.

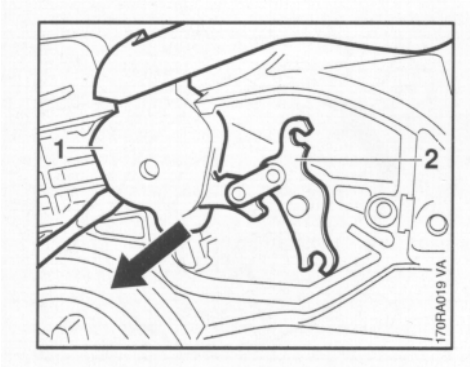
- If the groove of the brake spring anchor pin is worn, replace the housing.

• Remove the washer.

3.3.3 Assembly

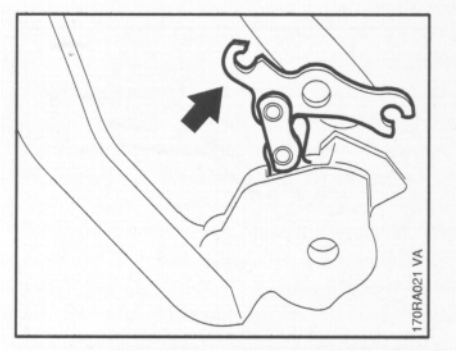
- Lubricate sliding and bearing points of chain brake with STIHL multipurpose grease or, preferably, Molykote grease - see 11.2.

- Fit flat spring in position.

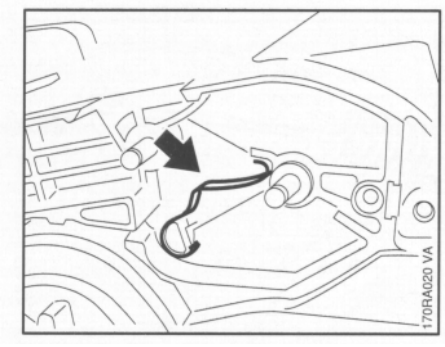


• Carefully ease the hand guard (1) and bell crank (2) off the pivot pins and lift them away together.

- Pull the bell crank out of the hand guard.

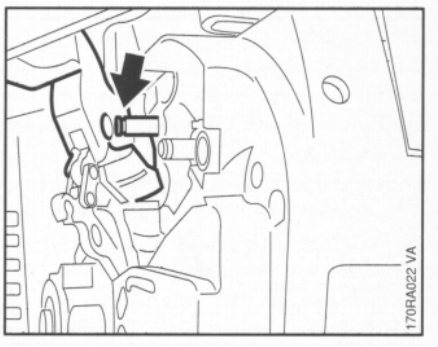


• Slide bell crank into end of hand guard. The short arm of the bell crank must point to top of hand guard.



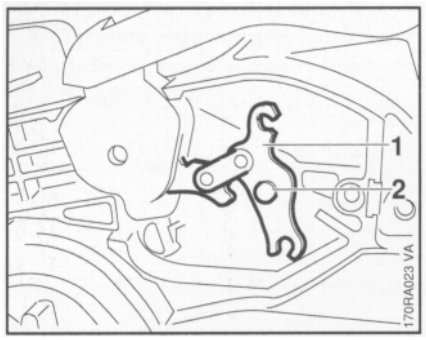
• Take out the flat spring.

- Inspect parts. Replace any worn or damaged parts.



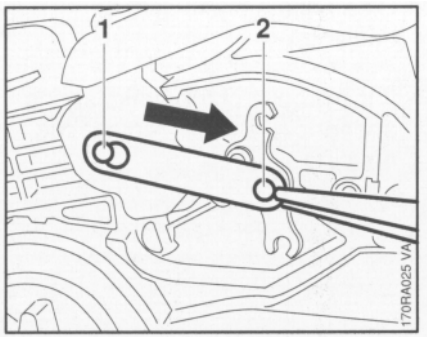
• Locate bearing boss of hand guard (1) on pivot pin.

- Fit other end over the housing.



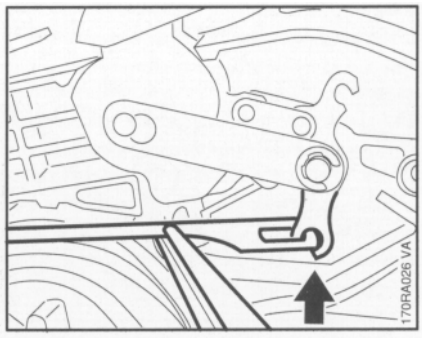
• Position bell crank (1) against pivot pin (2).

- Push hand guard and bell crank fully onto the pivot pins.

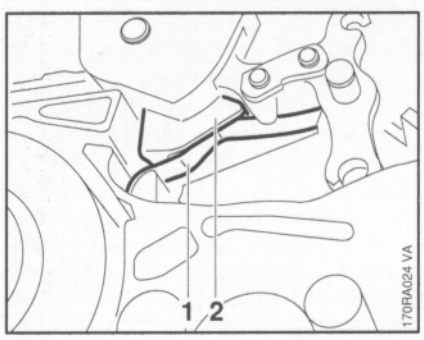


• Place strap on pivot pin (1) and pull it in direction of arrow until it engages the groove.

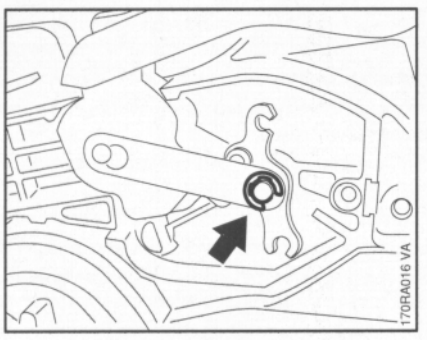
• Then push it over the pivot pin (2).



• Attach brake band to the bell crank.

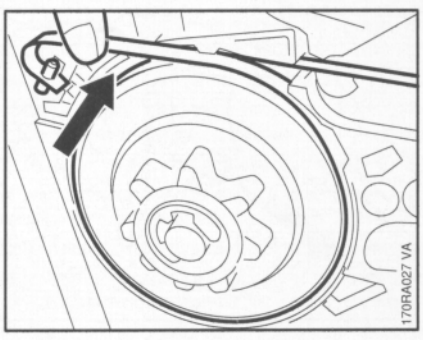


• Check that flat spring (1) is properly located on face (2) of bearing boss.

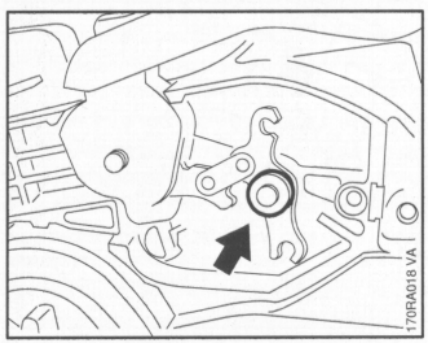


• Secure strap with E-clip.

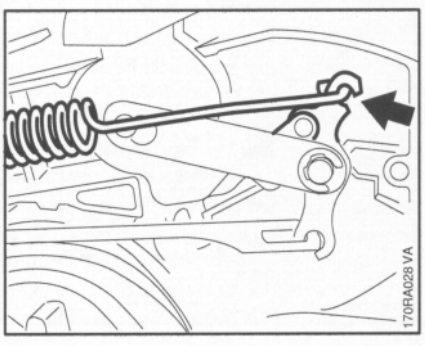
- Coat brake band with chain oil (STIHL Bioplus), see 11.2, to protect it from corrosion an cushion "snatching" during the first few brake applications.



• Fit the brake band and press it into the engine housing.

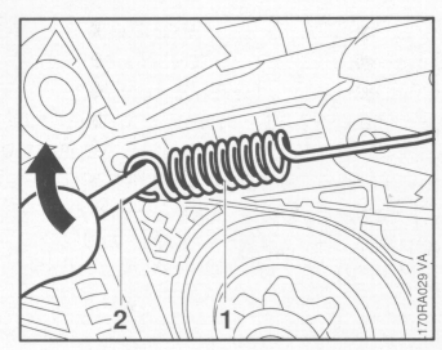


• Fit the washer.

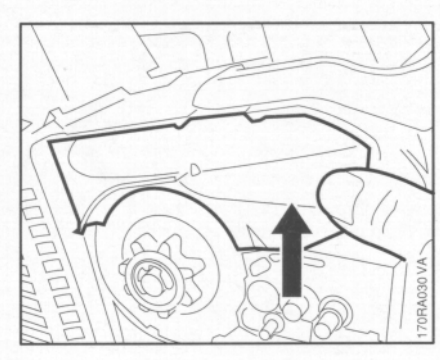


• Hook the brake spring onto the bell crank.

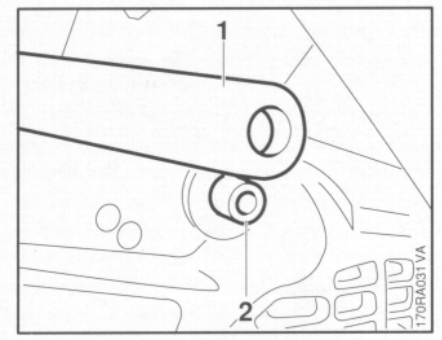
3.4 Chain Tensioner



- Use the assembly tool (2) 1117 890 0900 to attach the brake spring (1) to the anchor pin.

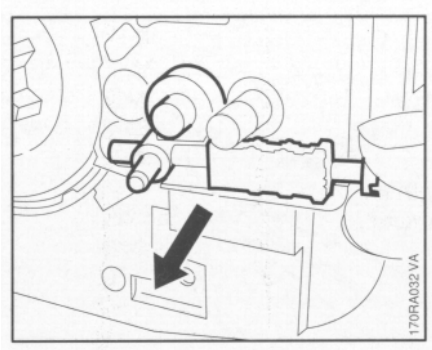


- Push cover over chain brake until it snaps into position and then tap it home carefully with a plastic mallet.



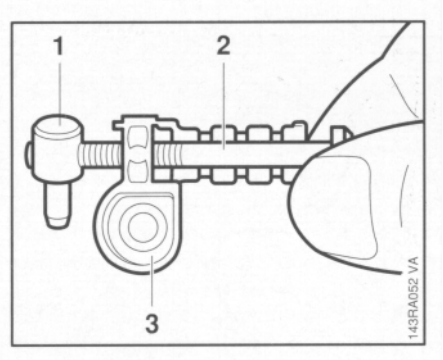
- Fit hand guard (1) over boss (2) on the fan housing.

- Insert screw and tighten to 1.7 Nm (1.25 lbf.ft).



- Remove the chain sprocket cover.

- Pull the cover out of the engine housing.

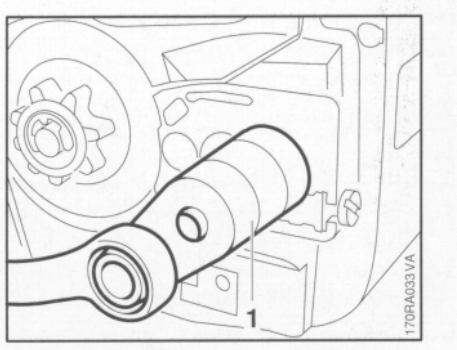


- Unscrew the nut (1) from the adjusting screw (2).

- Take the adjusting screw out of the cover (3).

Reverse the above sequence to install the chain tensioner.

3.5 Bar Stud



- Remove the chain sprocket cover.

- Push the stud puller (1) 5910 893 0501 onto the stud as far as it will go.

- Unscrew the stud.

- Insert stud and torque down to 16 Nm (11.8 lbf.ft).

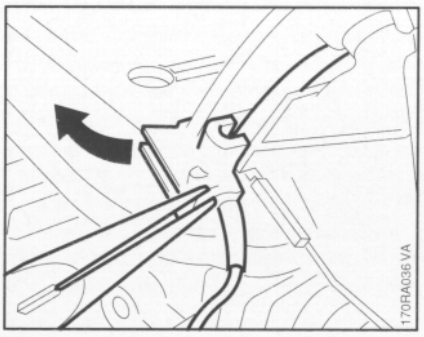
4. ENGINE
4.1 Disassembly

Always check and, if necessary, repair the fuel system, carburetor, air filter and ignition system before looking for faults on the engine.

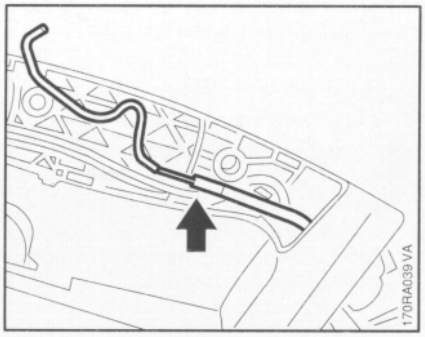
Troubleshooting chart - see "Standard Repairs, Troubleshooting" handbook.

- Remove the clutch - see 3.2.

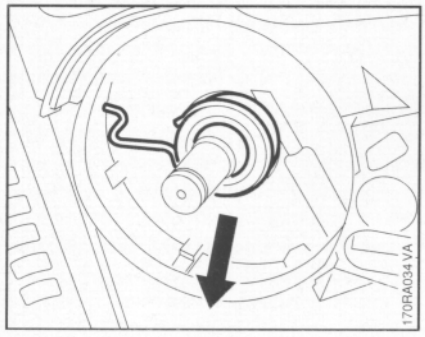
- Take the locking strip out of the cylinder.



• Open the grommet.

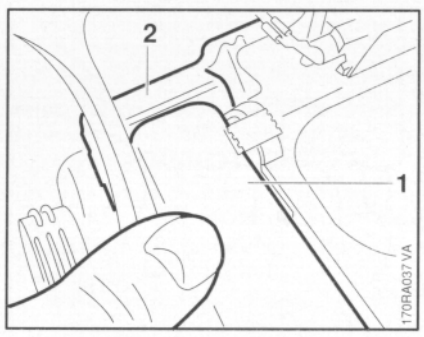


• Take throttle cable out of retainer.

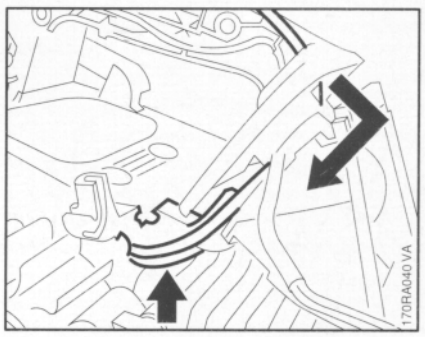


• Pull off the worm with drive spring.

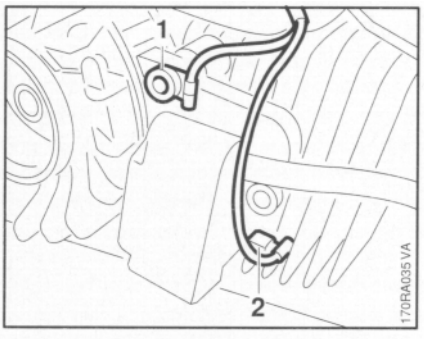
- Remove throttle trigger - see 8.1.



• Pull intake pipe (1) out of the intake casing (2).

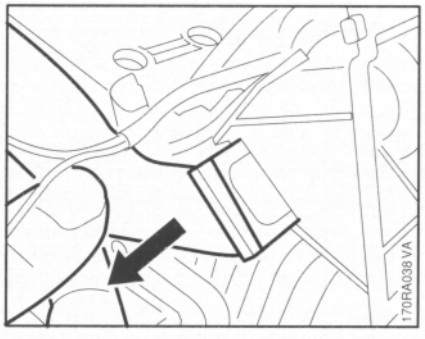


• Remove throttle cable from grommet and pull it downwards and out of the handle.



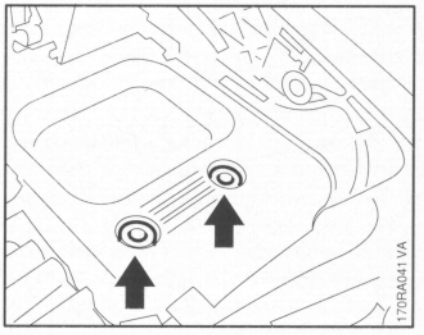
• Take out the upper screw (1).

• Disconnect the short circuit wire (2).



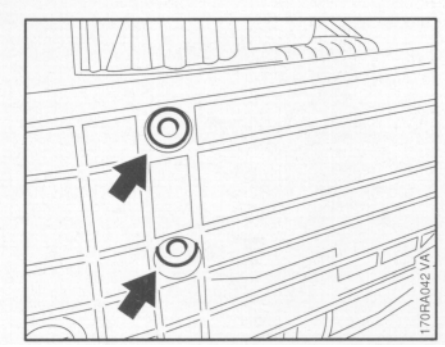
• Pull intake pipe with grommet out of engine housing.

- Remove the grommet.

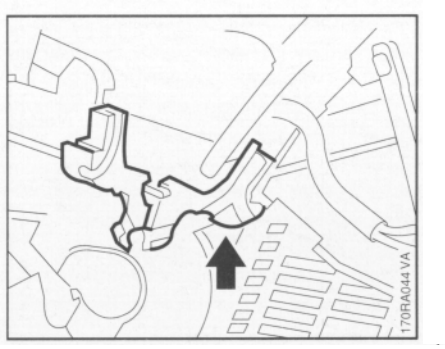


• Take out screws from top of engine.

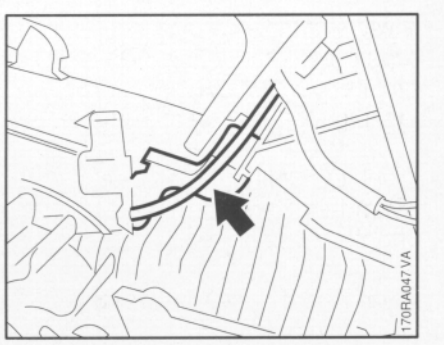
4.2 Assembly



- Take out screws from underside of engine.

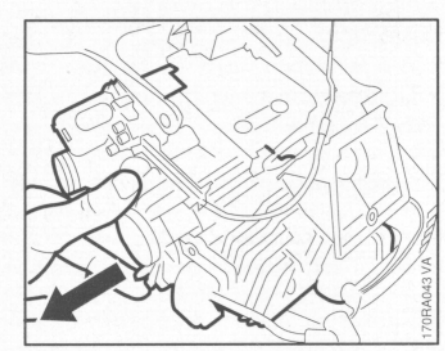


- Check that grommet is properly seated in the engine housing.

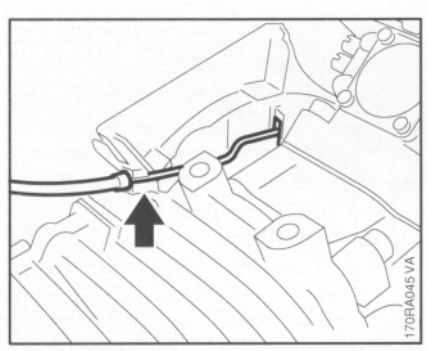


- Place throttle cable in the grommet.

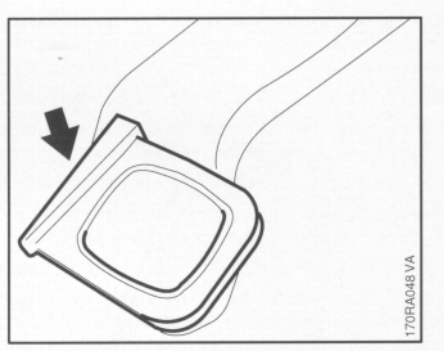
- Fit top and bottom engine mounting screws and torque down to 8.0 Nm (5.9 lbf.ft).



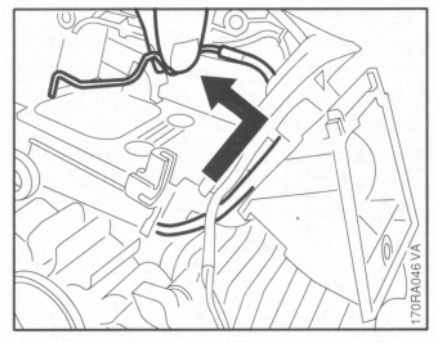
- Remove engine sideways from housing.



- Throttle cable sleeve must locate in retainer in air baffle.

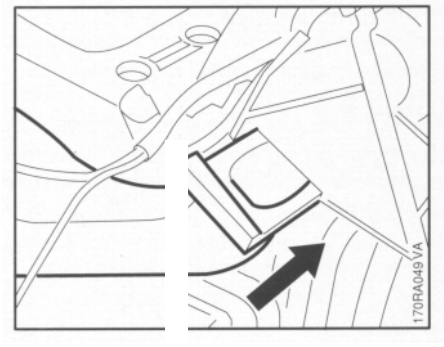


- Push grommet, ledge facing up, over the lugs of the intake pipe.

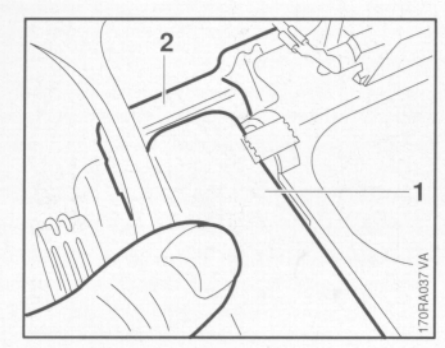


- Fit engine and position throttle cable in the handle at the same time.

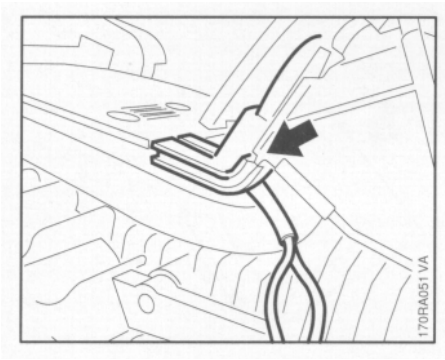
- Push throttle cable into retainer in handle.



- Push grommet with intake pipe into the engine housing until the ledge butts against the engine housing.



- Fit the intake pipe (1) in the intake casing (2).



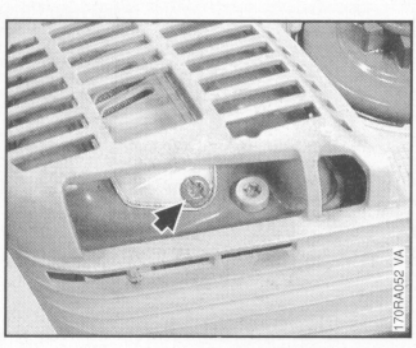
- Fit the short circuit and ground wires (pull them downward and out of handle as far as possible) in the grommet and close the grommet.

- Connect short circuit and ground wires to ignition module.

- Fit throttle trigger - see 8.1.

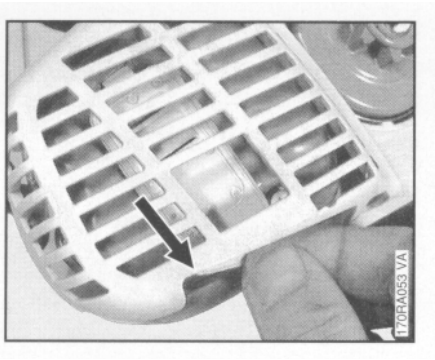
- Fit the worm with drive spring in position.

- Install the clutch - see 3.2.

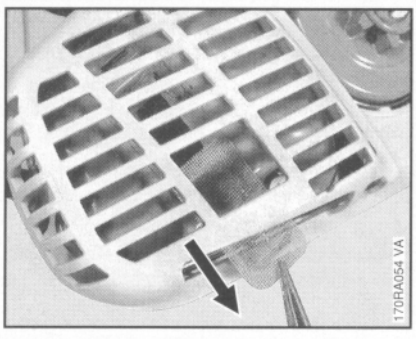


Spark arresting screen

- Take out the screw.

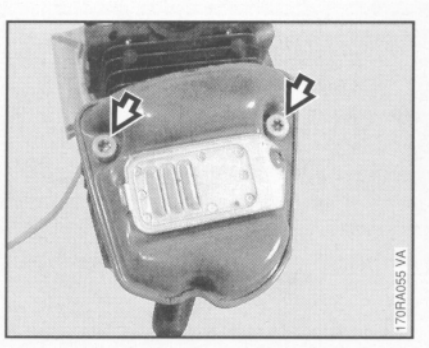


- Remove the cover plate.



- Remove the spark arresting screen.

- Clean the spark arresting screen or fit a new one if necessary.



Muffler

- Remove the engine - see 4.1.

- Take out the screws.

- Remove the muffler.

Reassemble in the reverse sequence.

- Tighten screws to 7.0 Nm (5.2 lbf.ft).

- Install the engine - see 4.2.

4.4 Leakage Test

Defective oil seals, diaphragms and gaskets or cracks in castings or the spacer flange cause leaks. Such faults allow supplementary air to enter the engine and thus upset the fuel-air mixture.

This makes adjustment of the prescribed idle speed difficult, if not impossible.

Moreover, the transition from idle speed to part or full throttle is not smooth.

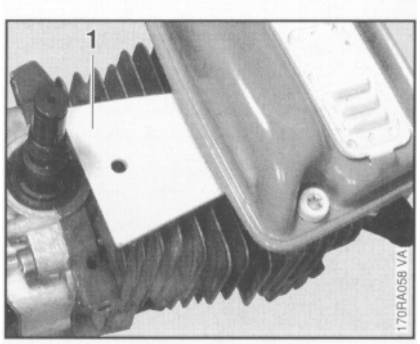
The engine housing can be checked thoroughly for leaks with the carburetor and crankcase tester and the vacuum pump.

4.4.1 Preparations

- Remove the carburetor - see 1 0.5.2.

- Set the piston to top dead center (T.D.C.). This can be checked through the spark plug hole.

- Remove the air baffle - see 10.6.

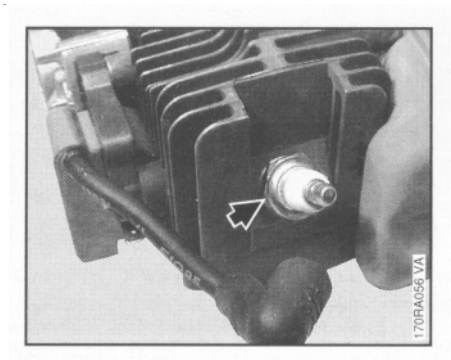


- Fit the sealing plate (1) 0000 855 8106 between muffler and cylinder.

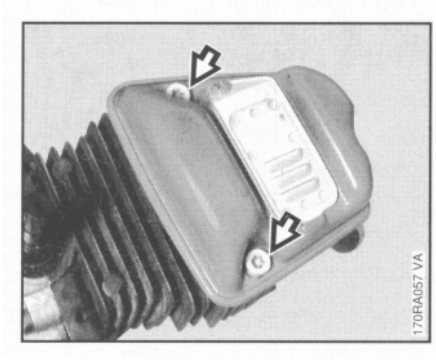
Note: The sealing plate must completely cover the exhaust port.

- Tighten the screws moderately.

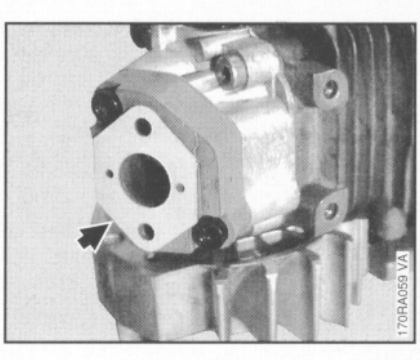
Important: Do not overtighten the screws since the sealing plate may otherwise be damaged.



- Fit the spark plug and tighten down to 25 Nm (18.5 lbf.ft).

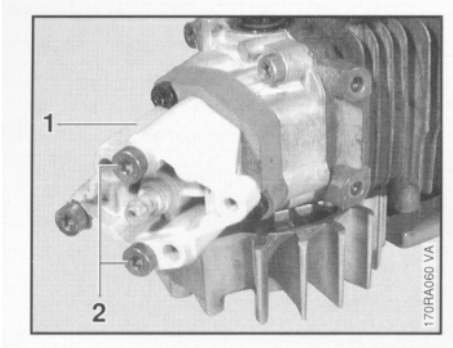


- Back off muffler mounting screws halfway.

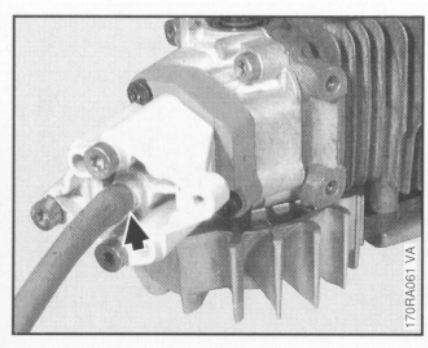


- Fit new gasket on spacer flange.

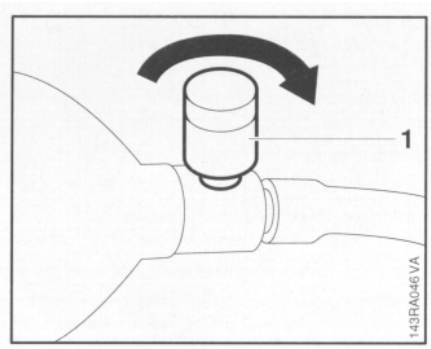
4.4.2 Pressure Test



- Use carburetor screws (2) to mount the test flange (1) 1128 850 4200 to spacer flange.

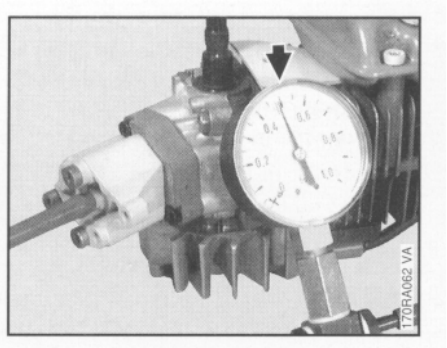


- Connect pressure hose of tester 1106 850 2905 to nipple on test flange.



- Close the vent screw (1) on the rubber bulb.

- Continue squeezing rubber bulb until the gauge indicates a pressure of 0.5 bar (7.25 psi). If this pressure remains constant for at least 20 seconds, the engine housing is airtight.



- However, if the indicated pressure drops, the leak must be located and the faulty part replaced.

Note: To find the leak, coat the suspect area with oil and pressurize the engine housing again. Bubbles will appear if a leak exists.

- Carry out the vacuum test - see 4.4.3 and 4.4.4.

- After finishing the test, open the vent screw and disconnect the hose.

- Remove the test flange.

- Loosen muffler mounting screws.

- Take out the sealing plate and tighten the screws to 7.0 Nm (5.2 lbf.ft).

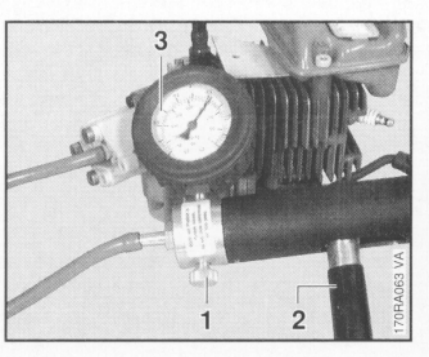
- Install the carburetor - see 10.5.2.

4.4.3 Vacuum Test (for diaphragm)

In these chainsaws the fuel-air mixture is sucked into the crankcase via a diaphragm valve. This valve closes to prevent the gas mixture flowing back into the carburetor.

If the diaphragm seating face on the spacer flange is dirty or the diaphragm is fatigued or faulty, the mixture may flow back and result in an irregular running behavior.

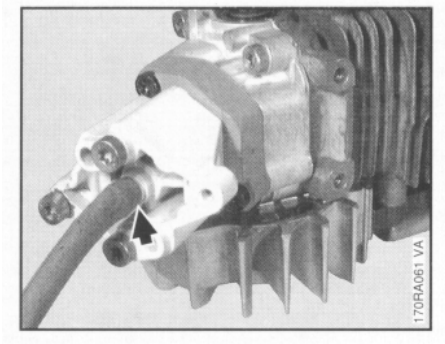
A test can be carried out with the vacuum pump to detect this kind of fault. The preparations for this test are the same as for the pressure test - see 4.4.1.



- Close the vent screw (1) on the pump.
- Operate lever (2) until pressure gauge (3) indicates a vacuum of 0.4 bar (5.8 psi).

Note: If the vacuum reading remains constant, or rises to no more than 0.3 bar (4.25 psi) within 20 seconds, it can be assumed that the spacer flange and the diaphragm are in good condition. However, if the pressure continues to rise, the spacer flange or the diaphragm must be replaced.

- After finishing the test, open the vent screw.
- Carry out vacuum test for oil seals - see 4.4.4.

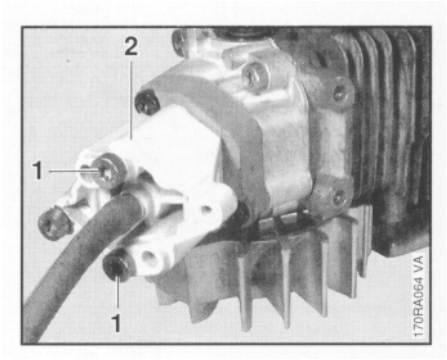


- Connect suction hose of vacuum pump 0000 850 3501 to test flange nipple.

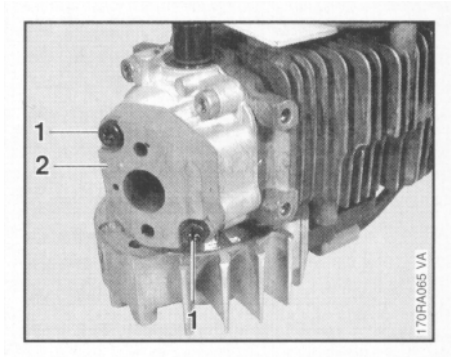
4.4.4 Vacuum Test (for oil seal)

Oil seals tend to fail when subjected to a vacuum, i.e. the sealing lip lifts away from the crankshaft during the piston's induction stroke because there is no internal counterpressure.

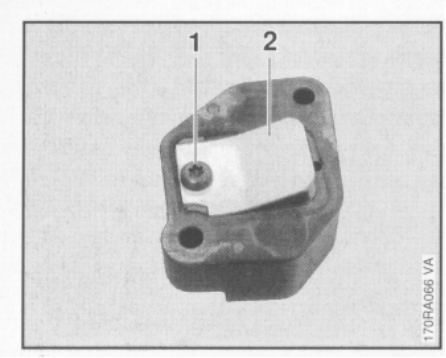
An additional test can be carried out with the vacuum pump to detect this kind of fault.



- Take out the screws (1).
- Remove the test flange (2) and gasket.

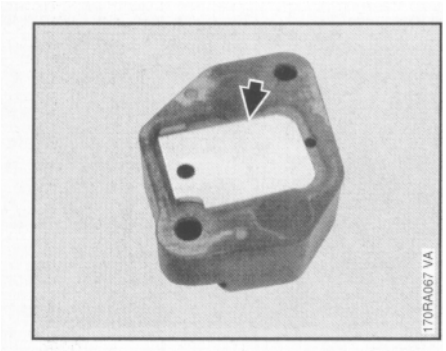


- Take out the screws (1).
- Remove the spacer flange (2) and gasket.

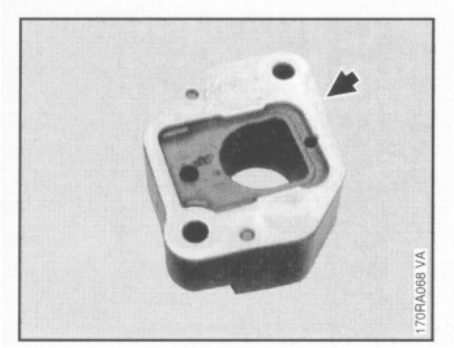


• Take out the screw (1).

• Remove the support plate (2).



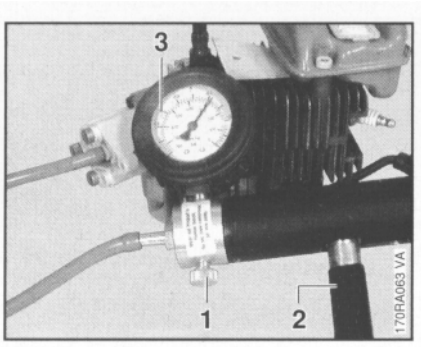
• Remove the diaphragm.



• Check that gasket is in good condition or fit new one if necessary.

- Fit spacer flange, insert screws and tighten down to 8.0 Nm (5.9 lbf.ft).

- Fit test flange with suction hose of vacuum pump 0000 850 3501 to the spacer flange.



• Close the vent screw (1) on the pump.

• Operate lever (2) until pressure gauge (3) indicates a vacuum of 0.4 bar (5.8 psi).

Note: If the vacuum reading remains constant, or rises to no more than 0.3 bar (4.25 psi) within 20 seconds, it can be assumed that the oil seals are in good condition. However, if the pressure continues to rise, the oil seals must be replaced

- After finishing the test, open the vent screw and disconnect the hose.

- Remove the test flange.

- Remove the spacer flange.

- Fit the diaphragm and support plate - see 10.7.

- Fit the spacer flange - see 10.7.

- Loosen muffler mounting screws.

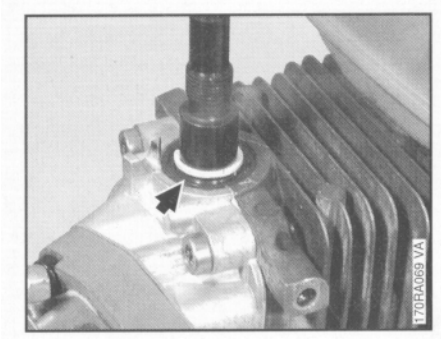
- Take out the sealing plate and tighten the screws to 7.0 Nm (5.2 lbf.ft).

- Install the carburetor - see 10.5.2.

4.5 Oil Seals

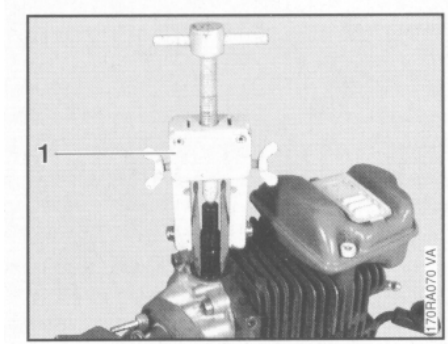
It is not necessary to disassemble the engine to replace the oil seals.

- Remove the fuel tank - see 10.4.



Clutch side:

• Pry out the retaining ring.

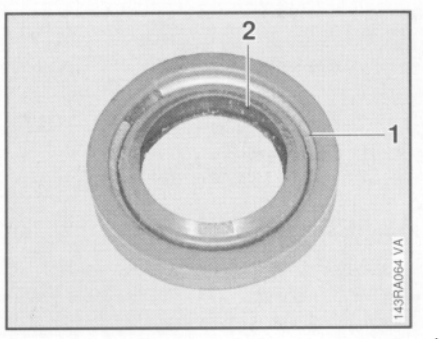


• Apply puller (1) 5910 890 4400 (jaws 0000 893 3706 with No. 3.1 profile).

- Clamp the puller arms.

- Pull out the oil seal.

Important: Take special care not to damage crankshaft stub.



• If an oil seal with clamping ring (1) is installed, use puller and No. 3.1 jaws to remove the clamping ring. Pry the sealing ring (2) out of the housing.

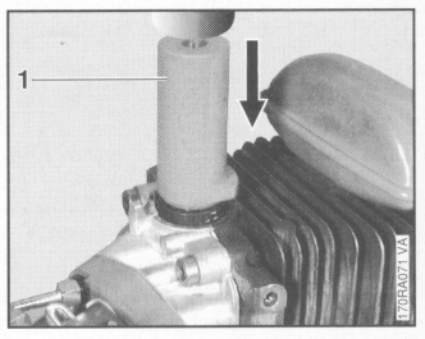
- Clean sealing face on crankshaft stub with standard commercial, solvent-based degreasant containing no chlorinated or halogenated hydrocarbons - see 11.2.

Note: If the cylinder and engine pan are assembled, only oil seals 9638 003 1581 (with clamping ring) may be installed.

- Lubricate sealing lips of oil seal with grease - see 11.2.

- Thinly coat the outside diameter of the oil seal with sealant - see 11.2.

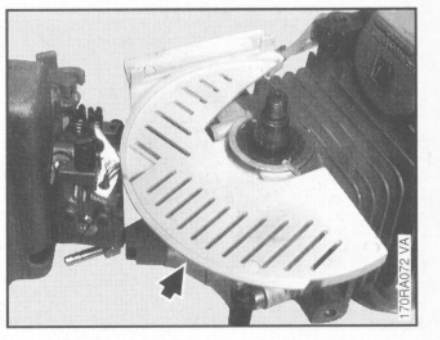
- Position the oil seal so that the clamping ring faces upwards.



• Use the press sleeve (1) 1123 893 2400 to install the oil seal.

- Fit a new retaining ring in the crankshaft groove.

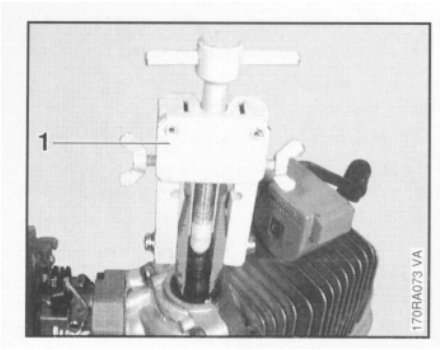
- Fit the fuel tank.



Starter side:

- Remove the flywheel - see 5.3.

• Remove the air baffle.



- Apply puller (1) 5910 890 4400 (jaws 0000 893 3706 with No. 3.1 profile).

- Clamp the puller arms.

- Pull out the oil seal.

Important: Take special care not to damage crankshaft stub.

Note: Remove the oil seal with clamping ring as described for clutch side.

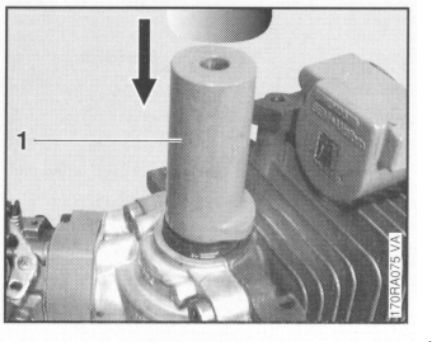
- Clean sealing face on crankshaft stub with standard commercial, solvent-based degreasant containing no chlorinated or halogenated hydrocarbons - see 11.2.

Note: Only install oil seal 9638 003 1581 (with clamping ring).

- Lubricate sealing lips of oil seal with grease - see 11.2.

- Thinly coat the outside diameter of the oil seal with sealant - see 11.2.

- Position the oil seal so that the clamping ring faces upwards.



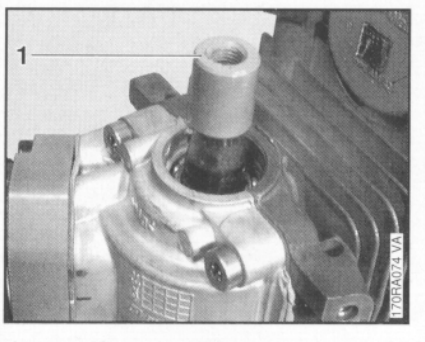
- Use the press sleeve (1) 1123 893 2400 to install the oil seal.

- Unscrew the guide.

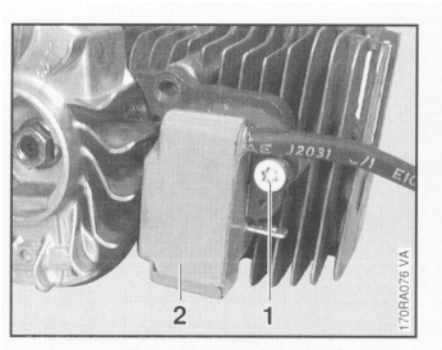
- Place air baffle in position and fit throttle cable in throttle trigger at the same time. Check that it has engaged properly.

- Install the flywheel - see 5.3.

- Install the engine - see 4.2.



- Screw guide (1) 1123 894 7700 onto crankshaft stub.

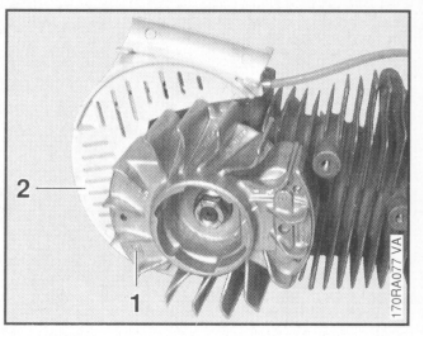


- Remove the muffler - see 4.3.

- Remove the carburetor - see 10.5.2.

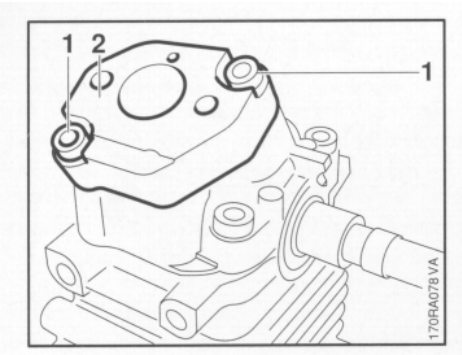
- Take out the screw (1).

- Remove the ignition module (2).



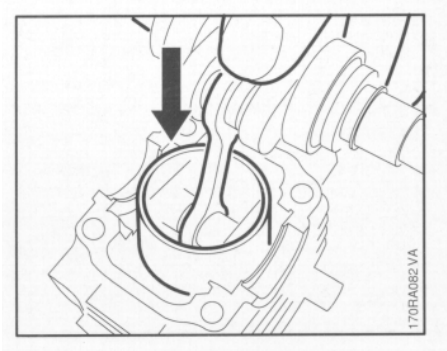
- Remove the flywheel (1) - see 5.3.

- Remove the air baffle (2).



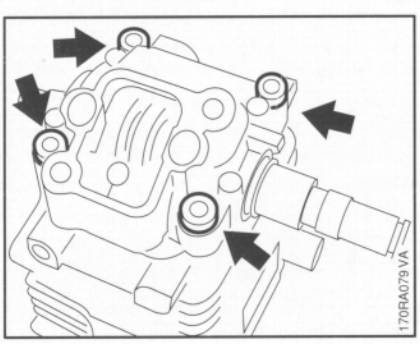
- Take out the screws (1).
- Remove the spacer flange (2).

- Inspect the cylinder and replace it if necessary.
- If a new cylinder has to be installed, always fit the matching piston. Replacement cylinders are only supplied complete with piston for this reason.
- Thoroughly clean all residue of sealant from the cylinder and engine pan mating faces.
- Lubricate piston and piston ring with oil.



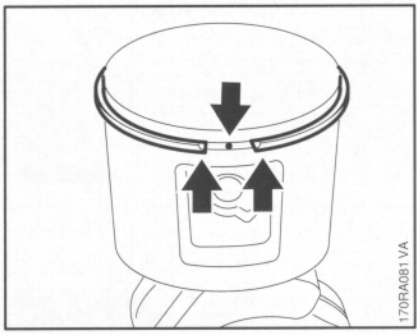
- Slide piston carefully into the cylinder.

Note: The piston ring is compressed by the inner taper of the cylinder.

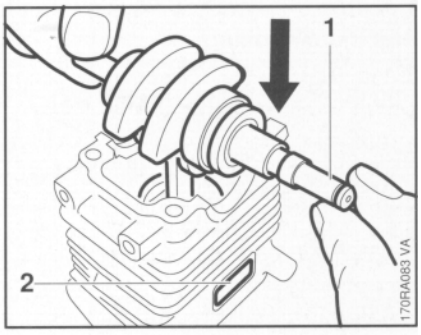


- Take out the screws.

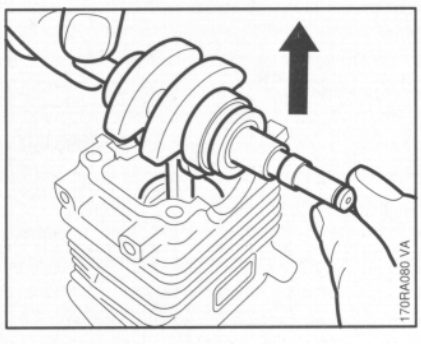
- Pull the engine pan off the cylinder.



- Position the piston ring so that the radii at the ring gap meet at the fixing pin in the piston groove when the ring is compressed.
- Apply a thin coating of sealant to the outer diameters of the oil seals, - see 11.2.

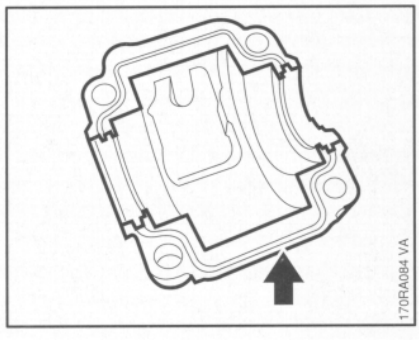


- Line up the crankshaft so that the long crankshaft stub (1) is on the same side as the exhaust port (2).
- Push piston home until ball bearings are seated.



- Lift the crankshaft and pull the piston out of the cylinder.

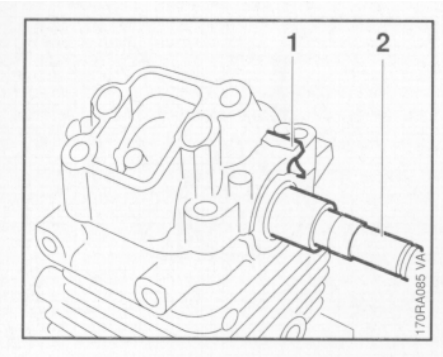
- Inspect ball bearings and oil seals and replace if necessary - see 4.9.



- Apply a thin bead of sealant to the engine pan mating face, see 11.2.

Note: Follow manufacturer's instructions for use of sealant.

4.7 Piston



- Fit the engine pan so that the seat (1) for the oil pump is at the same side as the long crankshaft stub (2).

- Insert screws and torque down to 8.0 Nm (5.9 lbf.ft).

- Fit the spacer flange - see 10.7.

- Fit the air baffle.

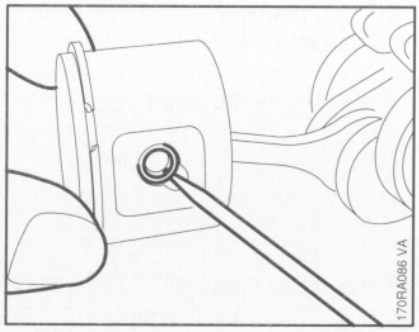
- Install the flywheel - see 5.3.

- Install and adjust the ignition module - see 5.2.

- Install the carburetor - see 10.5.2.

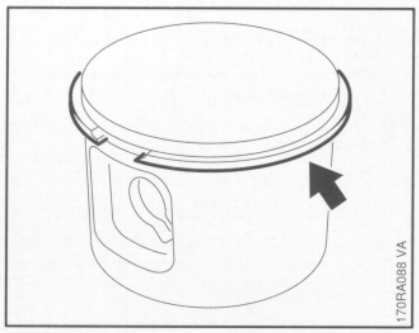
- Install the muffler - see 4.3.

- Install the engine - see 4.2.



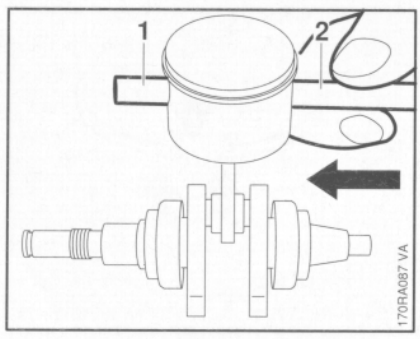
- Pull the piston out of the cylinder - see 4.6.

- Ease the hookless snap rings out of the grooves in the piston bosses.



- Inspect piston ring and replace if necessary - see 4.8.

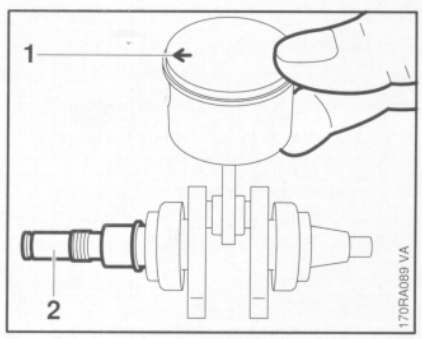
- Oil needle cage in the small end.



- Use the assembly drift (2) 1130 893 4700 to push the piston pin (1) out of the piston.

Note: If the piston pin is stuck, tap the end of the drift **lightly** with a hammer. **Important:** Hold the piston steady during this process to ensure that no jolts are transmitted to the connecting rod.

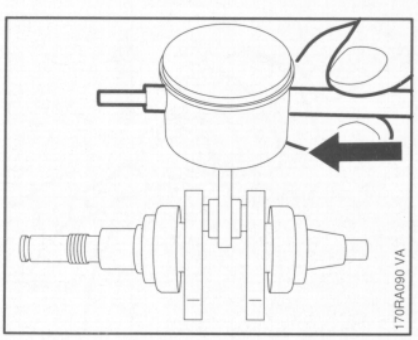
- Remove the piston from the connecting rod.



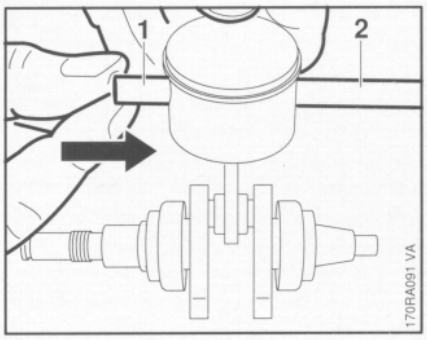
- To ease assembly, heat the piston slightly and push it over the connecting rod.

- Installed position of piston:

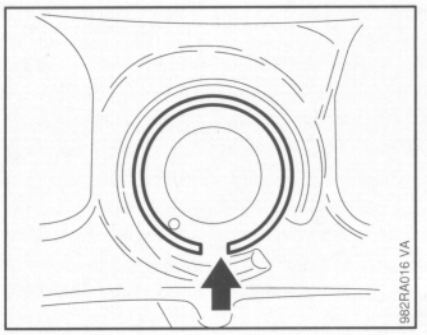
1 = Arrow
2 = Long stub of crankshaft



- Push the assembly drift, small diameter first, through the piston and small end (needle cage) and line up the piston.



- Fit the piston pin (1) on the assembly drift (2) and slide it into the piston (the pin slides home easily if the piston is warm).



- Fit the hookless snap rings in the grooves.

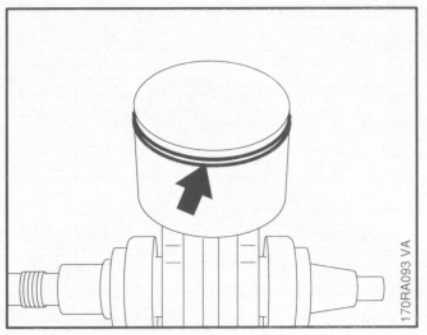
Note: The ring gap must be on the piston's vertical axis (point either up or down).

- Install the piston - see 4.6.

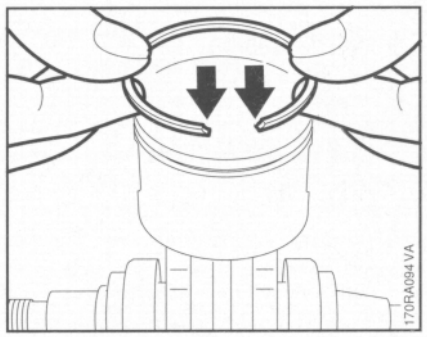
4.8 Piston Ring

- Pull the piston out of the cylinder - see 4.6.

- Remove ring from piston.



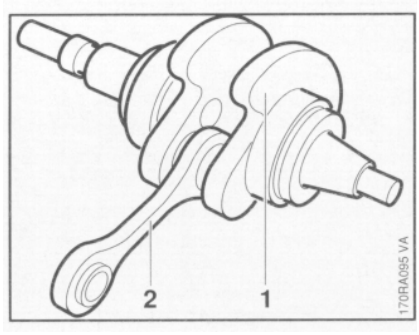
- Use a piece of old piston ring to scrape the groove clean.



- Install the new piston ring in the groove so that the radii face upward to piston head.

- Install the piston - see 4.6.

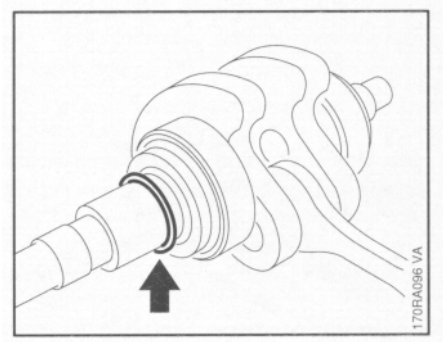
4.9 Crankshaft



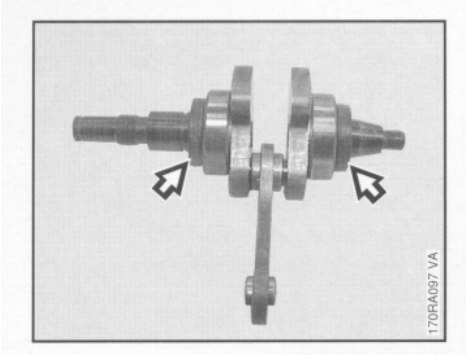
- Remove the piston - see 4.7.

- The crankshaft (1), connecting rod (2) and needle bearing are inseparable. This means the crankshaft must always be replaced as a complete unit.

- When fitting a replacement crankshaft, always install new oil seals and ball bearings.

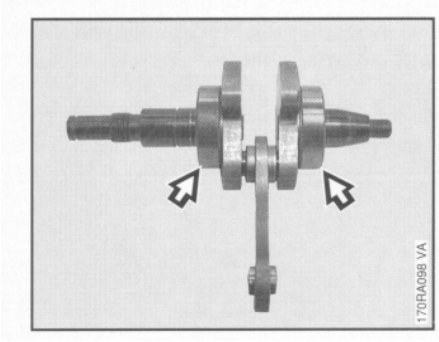


- Remove the retaining ring.

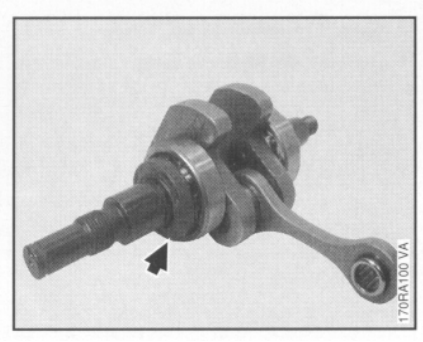


Note: If the engine pan has been removed from the cylinder for a repair, oil seals 9639 003 1585 (with rigid housing) may be installed.

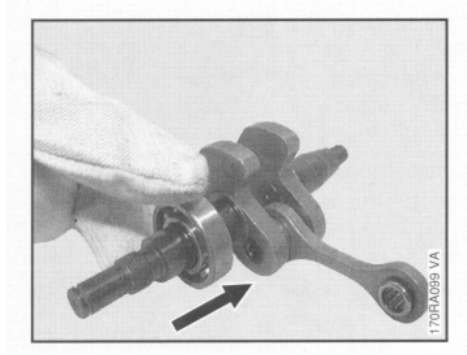
- Pull off both oil seals.



- Pull off both ball bearings.



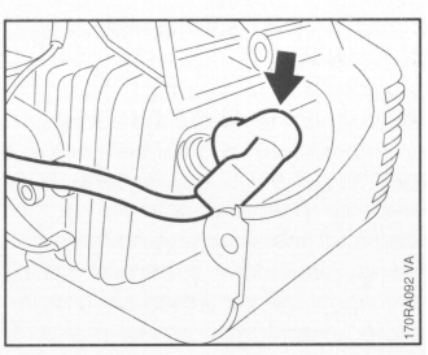
- Lubricate sealing lips of oil seals with grease - see 11.2.
- Slide oil seals over the crankshaft stubs so that their open sides are facing the ball bearings.
- Install new retaining ring in crankshaft groove.
- Install the piston - see 4.7.



- Heat ball bearing to approx. 50°C (120°F) and push it on to the crankshaft stub as far as stop.

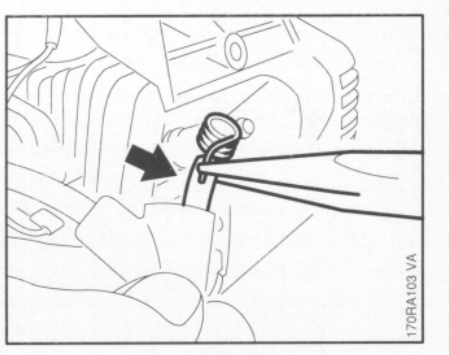
Warning! Exercise extreme caution when carrying out maintenance and repair work on the ignition system. The high voltages which occur can cause serious or even fatal accidents!

Troubleshooting on the ignition system should always begin at the spark plug. See "General Servicing, Troubleshooting" handbook.

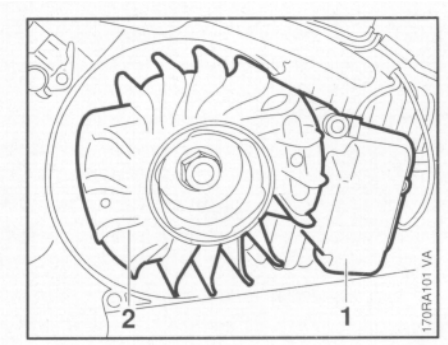


- Remove the fan housing - see 6.2.

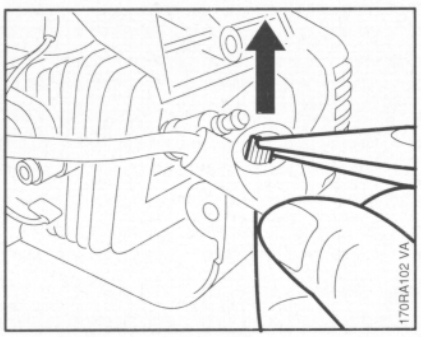
• Pull boot off the spark plug.



• Pinch the hook of the leg spring into the center of the lead, i.e. about 5 mm (0.2") from the end of the lead.



Note: The electronic (breakerless) ignition system basically consists of an ignition module (1) and flywheel (2).



• Use pliers to grip the leg spring and pull it out of the spark plug boot.

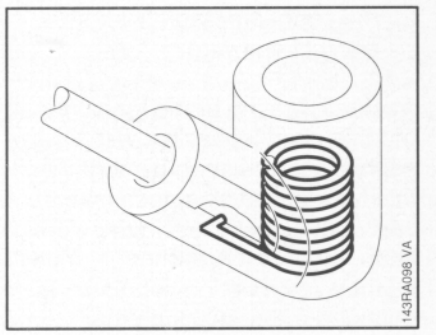
- Unhook the leg spring from the ignition lead.

- Pull spark plug boot off the ignition lead.

- Coat end of the ignition lead (about 20 mm/3/4") with oil.

- Fit spark plug boot over the ignition lead.

- Use pliers to grip the end of the ignition lead inside the spark plug boot and pull it out.



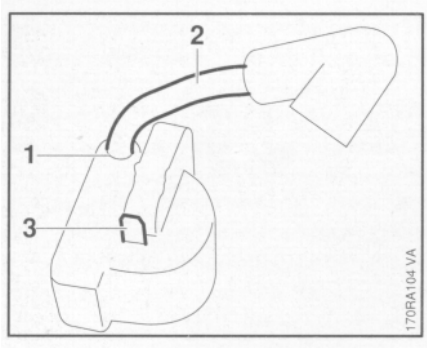
• Pull the lead back into the boot so that the leg spring locates properly inside it (as shown).

Important: If spark plug has a separate terminal nut, make sure that it is properly tightened down.

- Fit boot on spark plug.

- Fit the fan housing - see 6.2.

5.2 Ignition Module



The ignition module accommodates all the components required to control ignition timing. There are two electrical connections on the coil body:

1. the high voltage output (1) with ignition lead (2)

2. the connector tag (3) for the short circuit wire

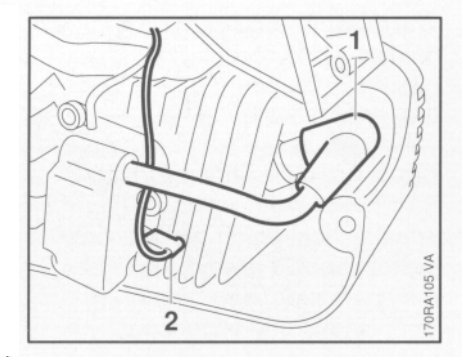
Accurate testing of the ignition module is only possible with sophisticated test equipment. For this reason it is only necessary to carry out a spark test in the workshop. A new ignition module must be installed if no ignition spark is obtained (after checking that wiring and stop switch are in good condition).

5.2.1 Ignition Timing

Ignition timing is fixed and is not adjustable.

Since there is no mechanical wear in these systems, ignition timing cannot get out of adjustment. However, an internal fault in the circuit can alter the switching point in such a way that a spark test will still show the system to be in order although timing is outside the permissible tolerance. This will impair engine starting and running behavior.

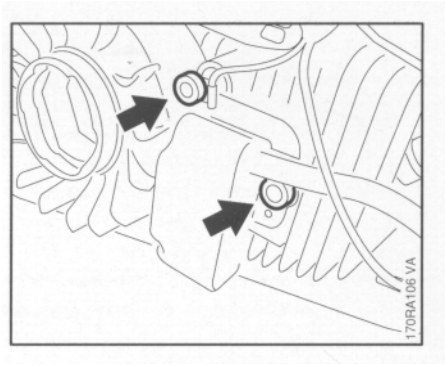
5.2.2 Removing and Installing



- Remove the fan housing - see 6.2

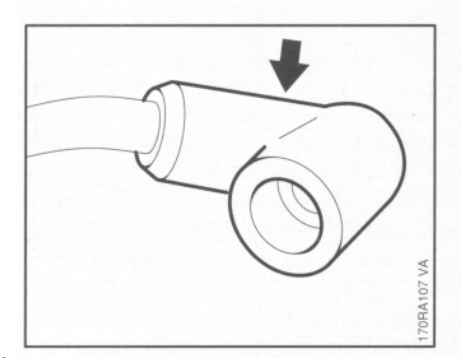
- Pull boot (1) off the spark plug.

- Pull the short circuit wire (2) off the connector tag.



- Take out the screws.

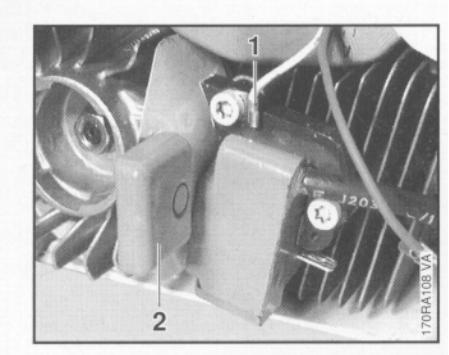
- Remove the ignition module.



- Remove the spark plug boot - see 5.1.

Note: The ignition lead is molded to the ignition module.

5.3 Flywheel



- Place the module in position, insert the screws but do not tighten them down yet.

• Secure the ground wire (1) with the upper mounting screw.

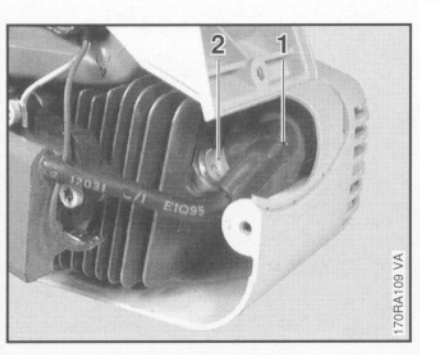
• Slide the setting gauge (2) 1111 890 6400 between the arms of the ignition module and the flywheel magnets.

- Press the ignition module against the flywheel and tighten down the mounting screws to a torque of 4.5 Nm (3.3 lbf.ft).

- Push the short circuit wire on to the connector tag.

- Fit boot on spark plug.

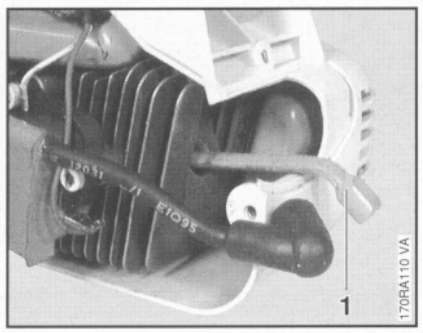
- Fit the fan housing - see 6.2.



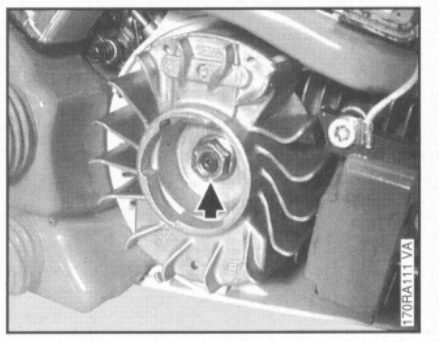
Removing the flywheel:

- Remove the fan housing - see 6.2.

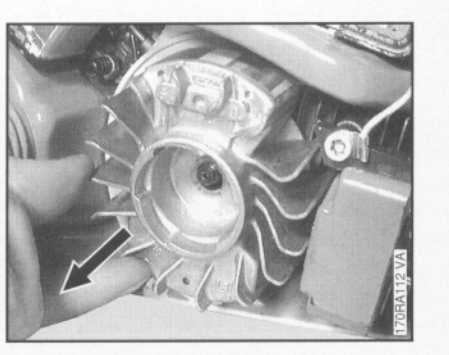
• Pull off the spark plug boot (1) and unscrew the spark plug (2).



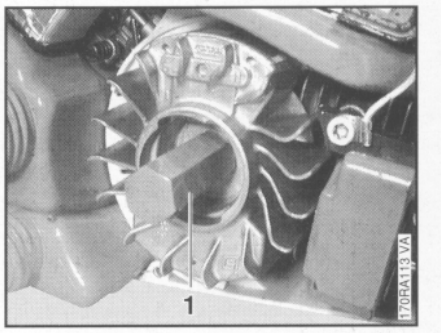
• Fit locking strip (1) 0000 893 5903 in cylinder.



• Unscrew the flywheel nut.

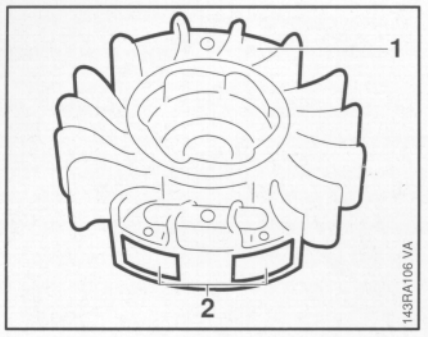


• Pull the flywheel off the crankshaft.



Note: If the flywheel cannot be pulled off by hand, screw the puller (1) 4133 893 0800 on to the crankshaft stub. Free off the flywheel by lightly tapping the end of the puller. Unscrew the puller and remove the flywheel.

5.4 Ground Wire/Short Circuit Wire

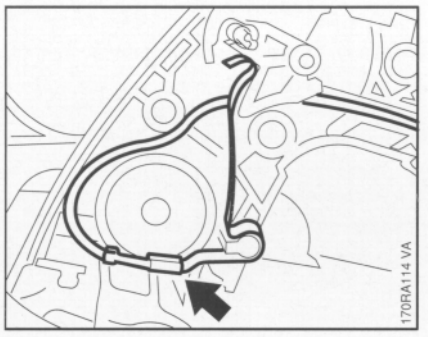


Inspect the condition of the flywheel (1) and magnets (2). If you find any damage (e.g. cracks, broken fan blades), fit a new flywheel.

Installing the flywheel:

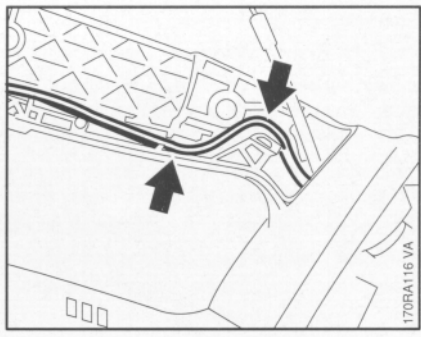
Important: Clean the stub of the crankshaft and the flywheel hub bore with a standard commercial, solvent-based degreasant containing no chlorinated or halogenated hydrocarbons - see 11.2.

- Fit the flywheel.
- Fit flywheel nut and tighten down to 28 Nm (21 lbf.ft).
- Take out the locking strip.
- Fit the spark plug and tighten down to 25 Nm (18.5 lbf.ft).
- Fit the fan housing - see 6.2.

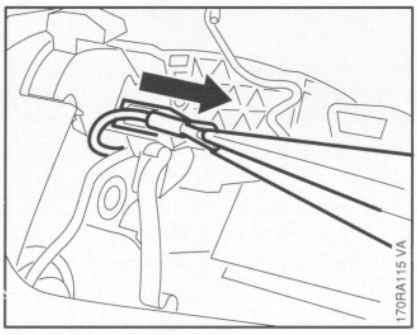


- Remove throttle trigger - see 8.1.

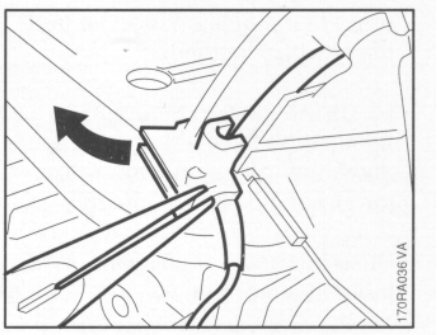
• Pull ground wire off the contact spring.



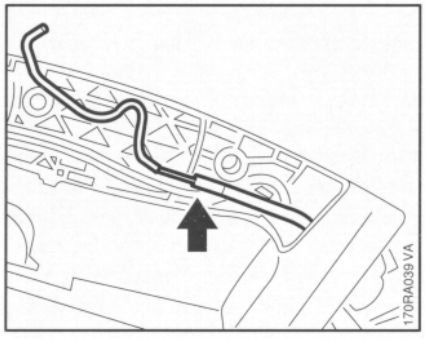
• Take the protective tube with the ground and short circuit wires out of the retainers in the handle.



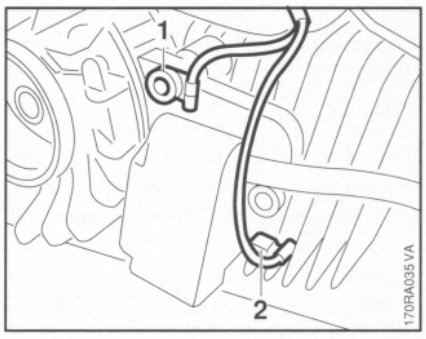
• Pull the short circuit wire out of switch shaft.



• Open the grommet.



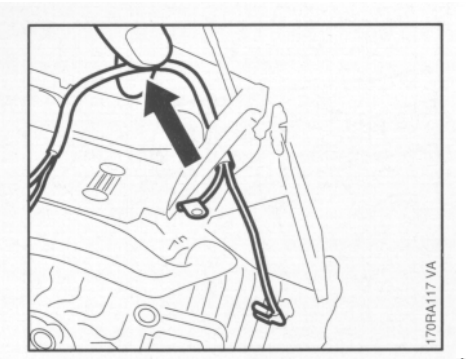
• Take the throttle cable out of the retainer.



• Take out the upper screw (1).

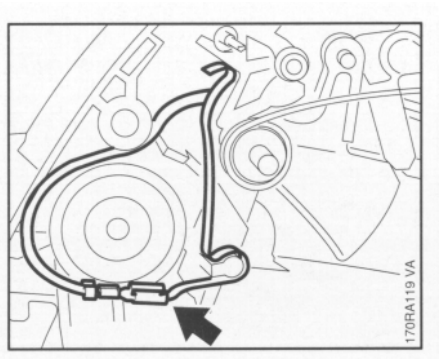
• Disconnect the short circuit wire (2).

5.5 Contact Spring



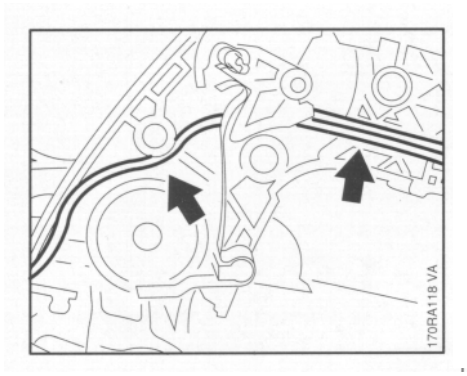
- Pull out the ground and short circuit wires.

Install in the reverse sequence.



- Remove the fan housing - see 6.2.

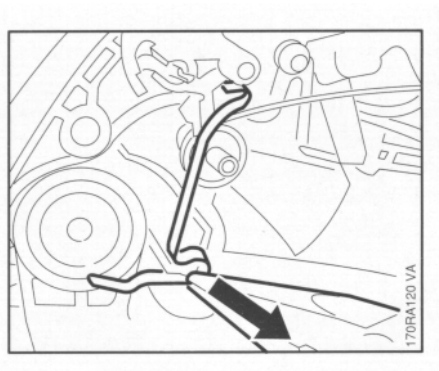
- Pull ground wire off the contact spring.



- Wiring harness must not locate against engine housing's filter wall; pull wiring harness back in direction of ignition module.

- Position protective tube with ground and short circuit wires correctly in rear retainers of handle.

- Make sure ground wire is properly positioned in front of handle.



- Pull the contact spring off the lug.

Install in the reverse sequence.

6. REWIND STARTER

6.1 General

If the action of the starter rope becomes very stiff and the rope rewinds very slowly or not completely, it can be assumed that the starter mechanism is mechanically in order but plugged with dirt. At very low outside temperatures the lubricating oil on the rewind spring may thicken and cause the spring windings to stick together. This has a detrimental effect on the function of the starter mechanism. In such a case it is sufficient to apply a few drops of paraffin (kerosine) to the rewind spring.

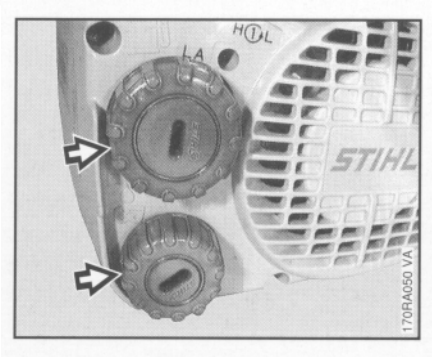
Then carefully pull out the starter rope several times and allow it to rewind until its normal smooth action is restored.

If clogged with dirt or pitch, the entire starter mechanism, including the rewind spring, must be removed. Take special care when removing the spring.

Wash all parts in paraffin or white spirit.

Lubricate the rewind spring and starter post with STIHL special lubricant, see 11.2, before installing.

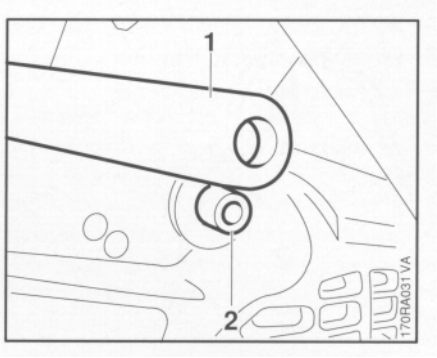
6.2 Fan Housing



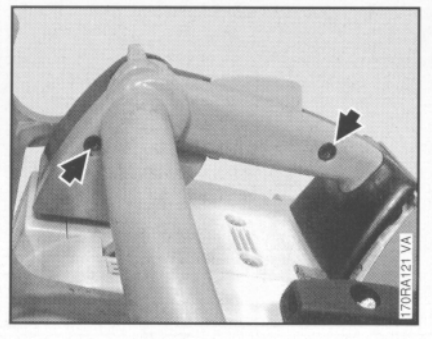
- Remove the air filter - see 10.1.

• Remove fuel tank and oil tank filler caps together with the cap retainers.

- Drain both tanks.

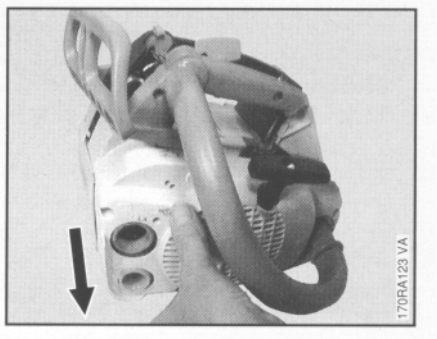


• Pull the hand guard (1) off the boss (2) on the fan housing.



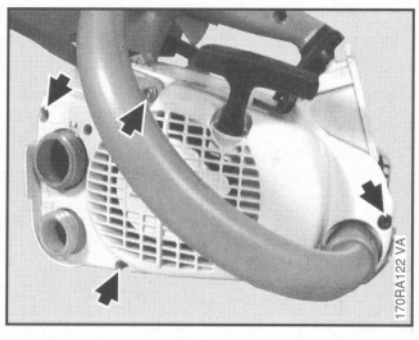
Note: Collect chain oil and fuel in separate clean containers or dispose of at an approved disposal site.

• Take the screws out of the handle molding.

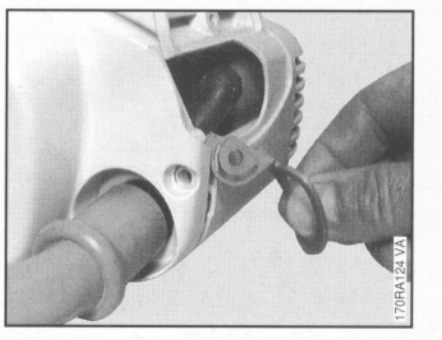


• Remove the fan housing.

Install in the reverse sequence.



• Take out the fan housing mounting screws.



• Fit retainer at same time.

- Tighten fan housing screws to 4.0 Nm (3.0 lbf.ft) and screw on hand guard to 1.7 Nm (1.3 lbf.ft).

6.3 Rewind Spring
6.3.1 Replacing

Troubleshooting chart - see "General Servicing, Troubleshooting" handbook.

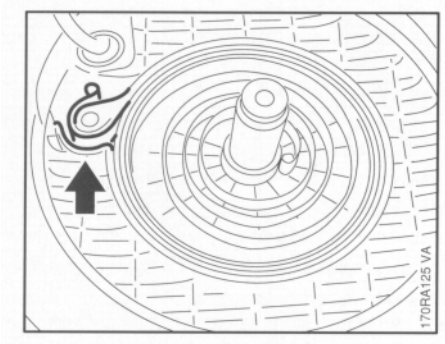
- Remove the fan housing -see 6.2.

- Remove the rope rotor, see "General Servicing, Troubleshooting" handbook, use pliers to remove any remaining pieces of spring from the fan housing.

Note: The replacement spring comes ready for installation and is held together by a wire retainer.

- It should be lubricated with a few drops of STIHL special lubricant before installation - see 11.2.

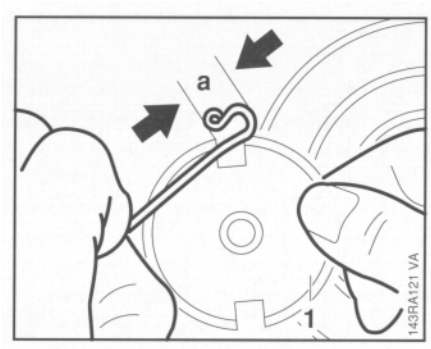
- The wire retainer slips off as the rewind spring is pressed into the fan housing.



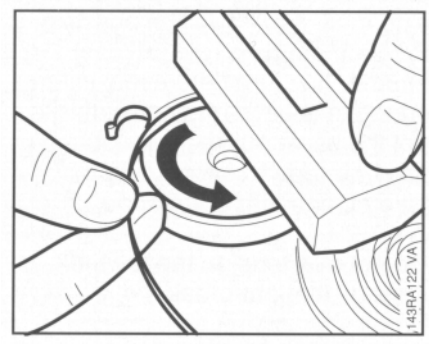
- Engage the anchor loop over the lug in the fan housing.

Caution: The rewind spring may pop out and uncoil during installation.

- If the rewind spring has popped out, refit it as follows:



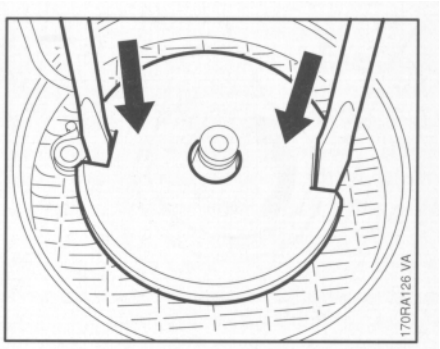
- Position anchor loop about 11 mm (0.4") (dimension 'a') from the edge of the assembly tool (1) 1116 893 4800.



- Fit the rewind spring in the assembly tool in the counterclockwise direction, starting outside and working inwards.

- The wooden assembly block can be placed over the assembly tool to simplify this operation.

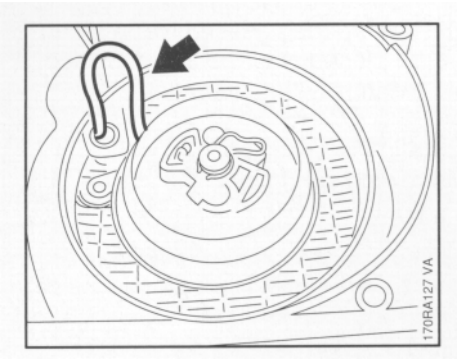
- Slip the assembly tool with rewind spring over the starter post.



- Push the rewind spring into the fan housing and then remove the assembly tool.

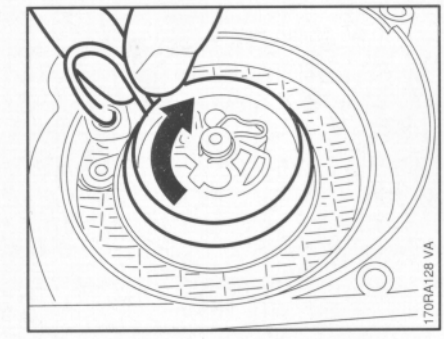
- Install the rope rotor - see "General Servicing, Trouble-shooting" handbook.

- Tension the rewind spring - see 6.3.2.

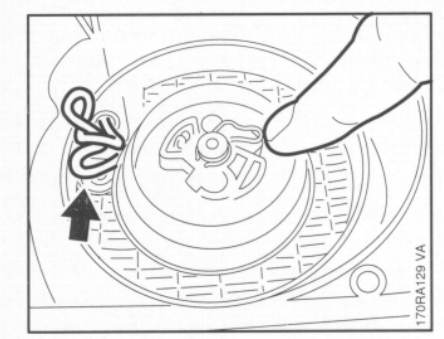


- Make a loop in the starter rope.

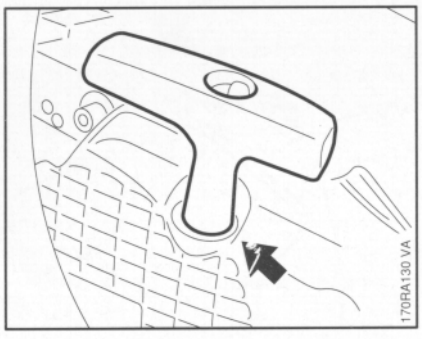
- Hold the starter grip firmly to keep the rope tensioned.
- Let go of the rope rotor and slowly release the starter grip so that the rope winds onto the rotor.



- Grip the rope **close** to the rotor and use it to turn the rope rotor six full turns clockwise.



- Hold the rope rotor steady.
- Pull out the rope with the starter grip and straighten it out.



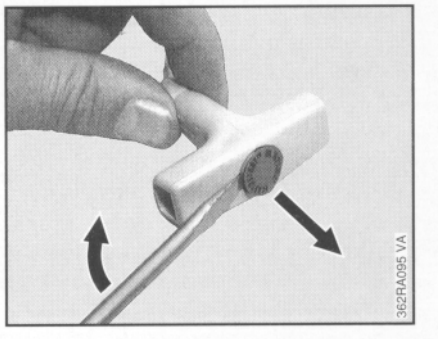
Note: The rewind spring is correctly tensioned when the starter grip sits firmly in the rope guide bush without drooping to one side. If this is not the case, tension the spring by one additional turn.

When the starter rope is fully extended, it must still be possible to rotate the rope rotor at least another half turn before maximum spring tension is reached. If this is not the case, pull the rope out, hold the rope rotor steady and take off one turn of the rope.

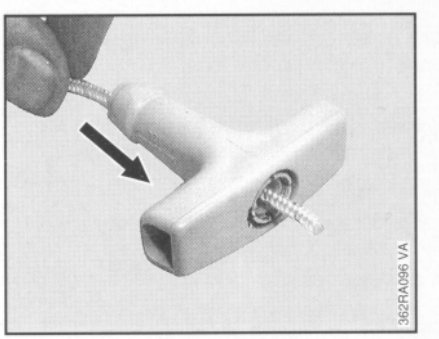
Do not overtension the rewind spring - it might break.

- Refit the fan housing - see 6.2.

- Remove the fan housing - see 6.2.
- Remove the starter rope from the rotor, see "General Servicing, Troubleshooting" handbook.

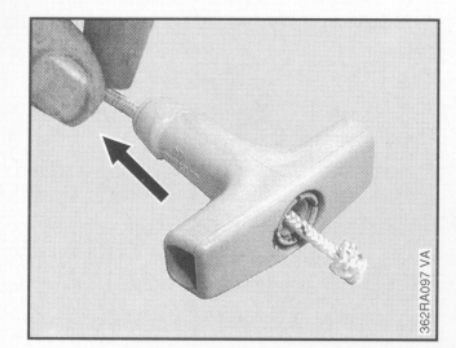


- Ease the cap out of the starter grip.
- Pull the rope out of the starter grip.



- Thread end of new rope through the underside of the starter grip.
- Secure end of rope it with a simple overhand knot.

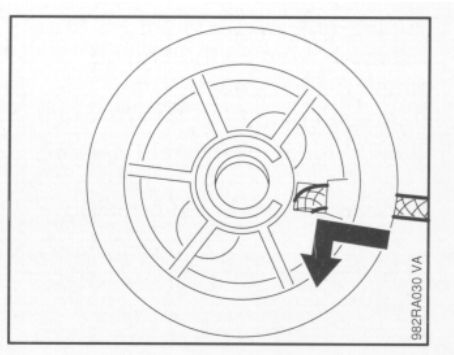
6.5 Starter Grip (ElastoStart)



The starter grip is supplied complete with starter rope.

- Remove the fan housing - see 6.2.

- Remove the rope rotor - see "General Servicing, Trouble-shooting" handbook.



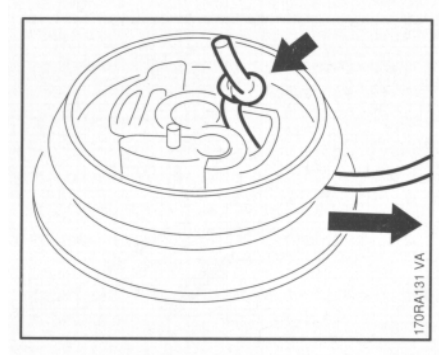
• Pull rope back until the knot locates in the starter grip.

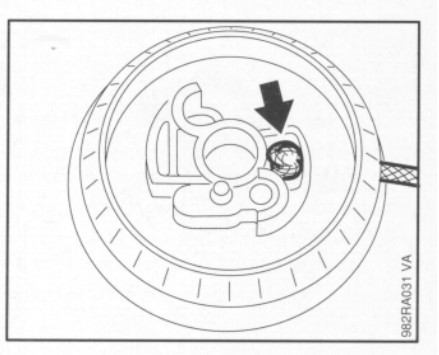
- Press cap into the starter grip.

- Fit the starter rope on the rotor, see "General Servicing, Trouble-shooting" handbook.

• Thread rope through the side of the rotor.

- Push it through the inner bore from the underside, pull it out at the top and secure with a simple overhand knot.





- Grip knot and pull it out of rope rotor.

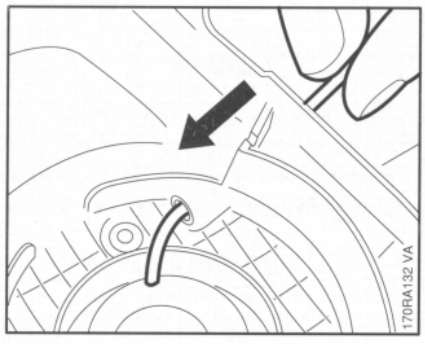
• Undo the knot and remove the starter rope from the rotor and fan housing.

• Pull the rope back into the rotor so that the knot locates in the recess.

- Install the rope rotor - see "General Servicing, Trouble-shooting" handbook.

- Tension the rewind spring - see 6.3.2.

- Refit the fan housing - see 6.2.



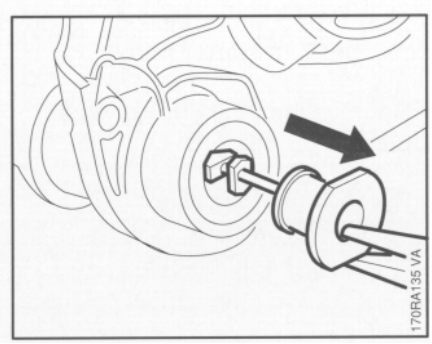
• Thread the new starter rope through the guide bush from outside.

7. AV HANDLE SYSTEM

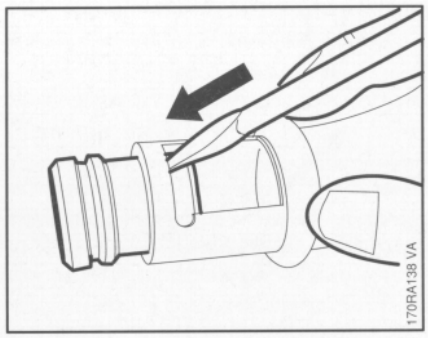
Rubber anti-vibration buffers are installed between the engine housing and handle frame. Damaged rubber buffers (annular buffers) must always be replaced.

Annular buffers in fan housing

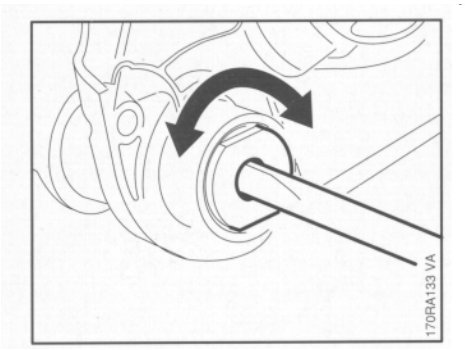
- Remove the fan housing
  - see 6.2.



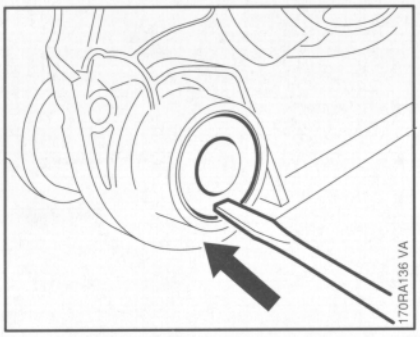
- Rotate plug (with key) approx. 90 degrees and take it out of the annular buffer.



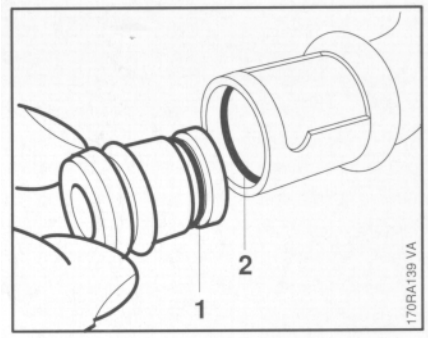
- Push the annular buffer out of the handlebar.



- Rotate plug (with key) approx. 90 degrees.

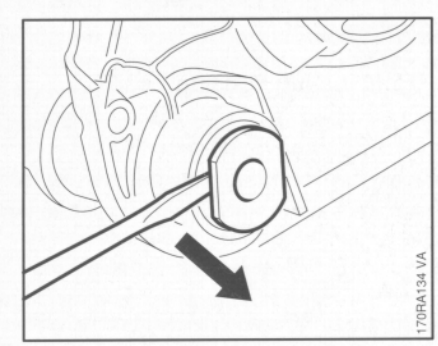


- Push the rubber buffer out of the fan housing.

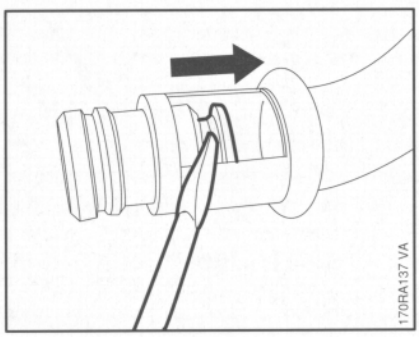


- Push the small end of the annular buffer (oil it first) into the handlebar until its groove (1) engages the rib (2).

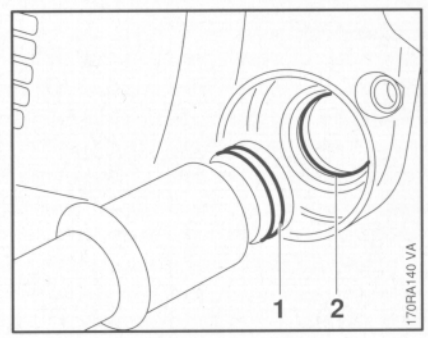
- Push home the plug (without key).



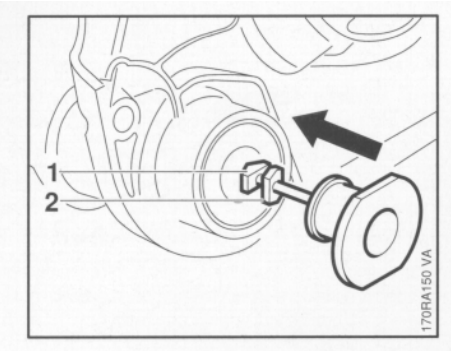
- Pry plug (with key) out of annular buffer.



- Pry plug (without key) out of annular buffer.

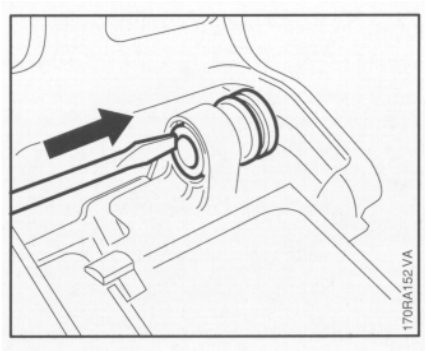


- Place handlebar in position, apply a little oil to the front end of the annular buffer and push it home until its groove (1) engages the rib (2).

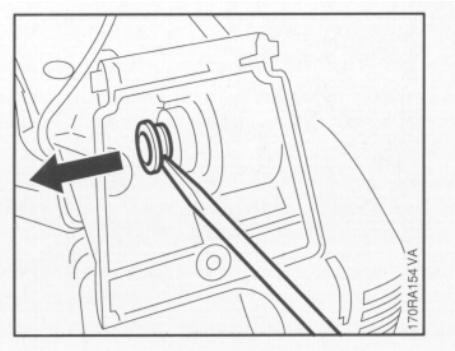


- Position the plug so that the front key (1) lines up with the slot in the inner plug.
- Push the plug in until you feel noticeable resistance.
- Now turn plug about 90 degrees (the rear key (2) then lines up with the slot) and push it home until it butts against the rubber buffer.

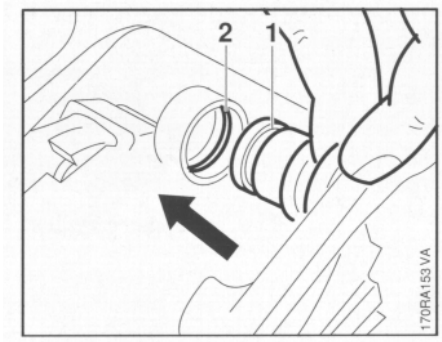
- Rotate the plug another 90 degrees.



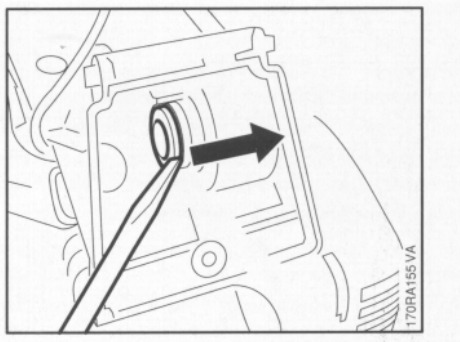
- Push the annular buffer out of its seat.



- Pry plug (without key) out of annular buffer.



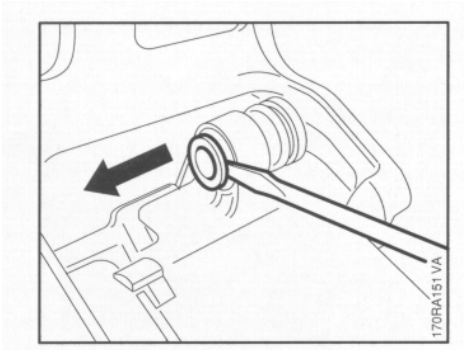
- Push the small end of the annular buffer (oil it first) into the seat until its groove (1) engages the rib (2).



- Push the annular buffer out of its seat.

Front annular buffer in engine housing

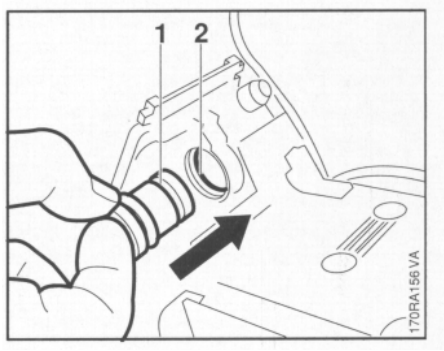
- Remove the top handle - see 8.5.



- Pry plug (without key) out of annular buffer.

Rear annular buffer in engine housing

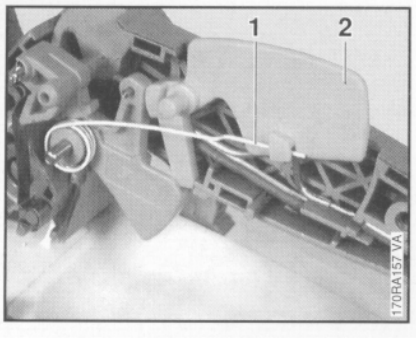
- Remove the top handle - see 8.5.



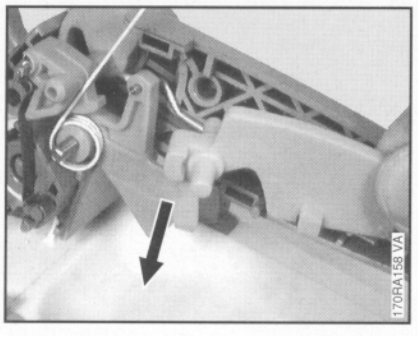
- Push the small end of the annular buffer (oil it first) into the seat until its groove (1) engages the rib (2).

8. MASTER CONTROL/HANDLE SYSTEM

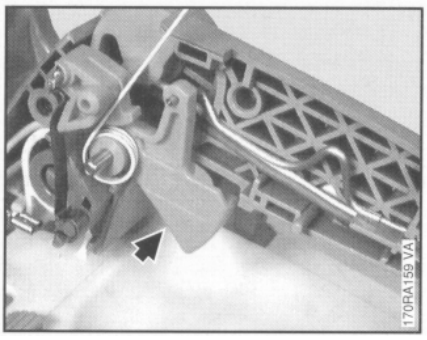
8.1 Interlock Lever/Throttle Trigger



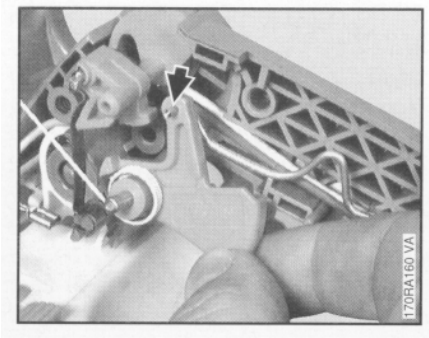
- Remove the fan housing - see 6.2.
- Take the torsion spring (1) off the interlock lever (2).



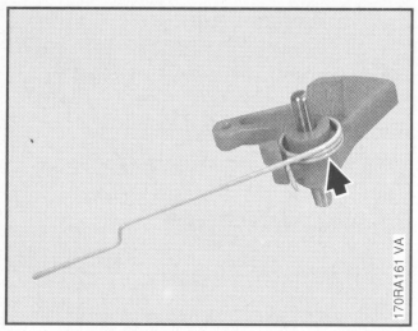
- Remove the interlock lever.



- Remove the throttle trigger.



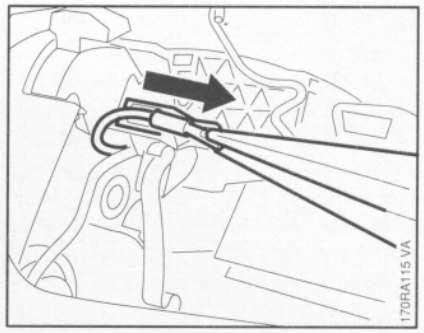
- Pull the throttle cable out of throttle trigger.



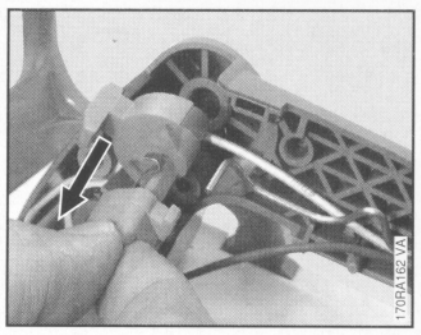
- Take the torsion spring off the throttle trigger.

Reassemble in the reverse sequence.

8.2 Switch Shaft

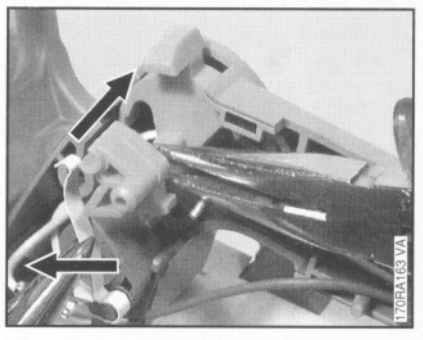


- Remove the throttle trigger - see 8.1.
- Pull contact sleeve of short circuit wire out of switch shaft.



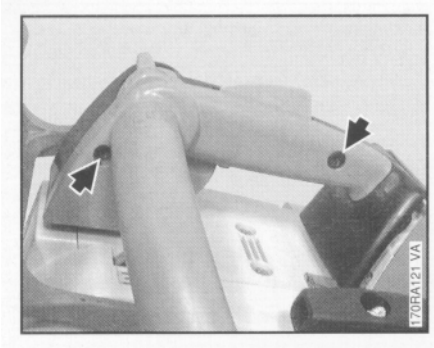
- Pull out the switch shaft.

Reassemble in the reverse sequence.



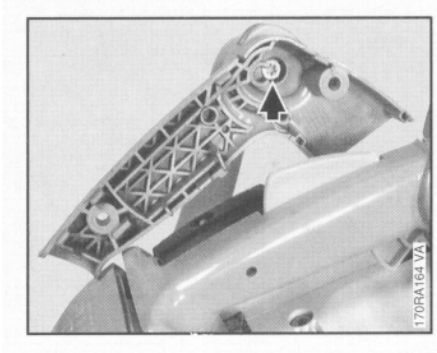
- It is necessary to push the contact spring slightly forward to install the switch shaft.

8.3 Handle Molding

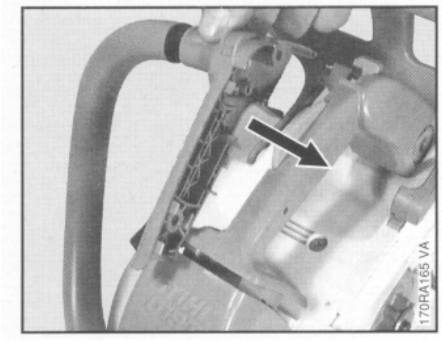


- Take the screws out of the handle molding.

- Carefully pull the handle molding off the top handle.



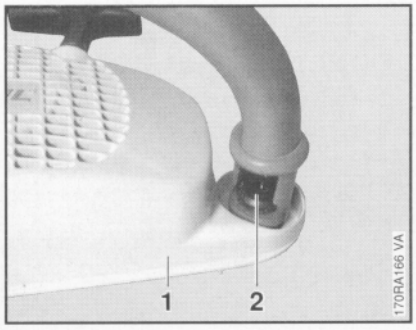
- Take out the screw.



- Pull the handle molding off the handlebar.

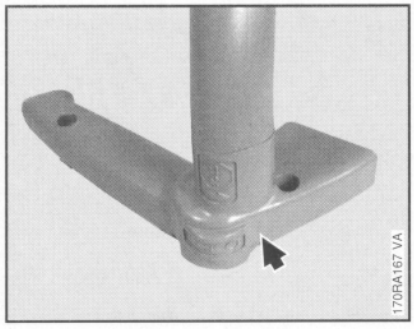
Reassemble in the reverse sequence.

8.4 Handlebar



- Remove the fan housing - see 6.2.

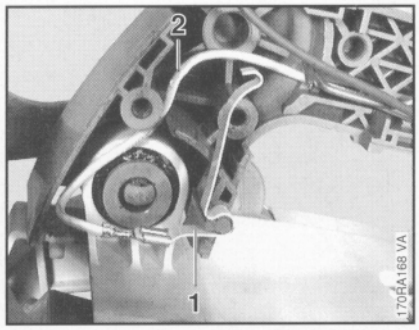
- Remove the fan housing (1) and annular buffer (2) - see 7.



- Remove the handle molding -see 8.3.

Reassemble in the reverse sequence.

8.5 Top Handle



- Remove the switch shaft - see 8.2.

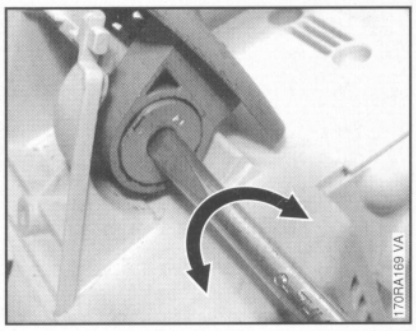
- Pull the contact spring (1) off the lug.

- Pull the ground wire (2) out of the retainer.

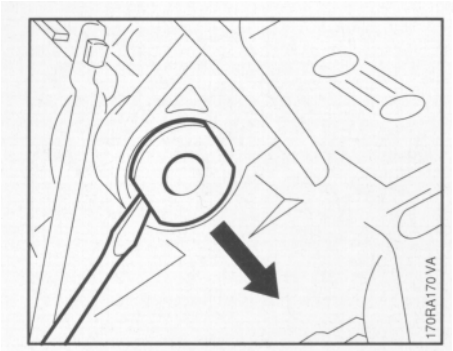
- Take the throttle cable out of the retainer.

- Pull the protective tube with ground and short circuit wires out of the retainers.

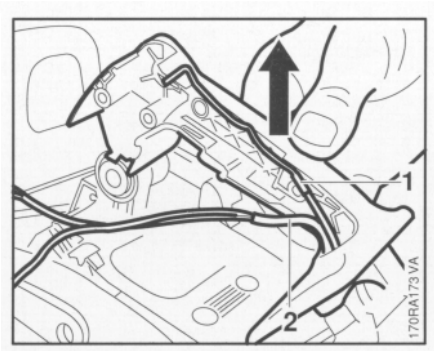
Note: Carry out the four following operations on the front and rear annular buffer.



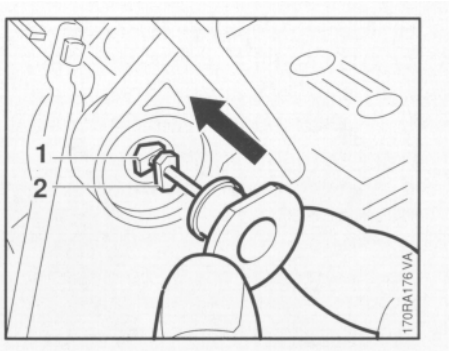
- Rotate plug (with key) approx. 90 degrees.



- Pry plug (with key) out of annular buffers.

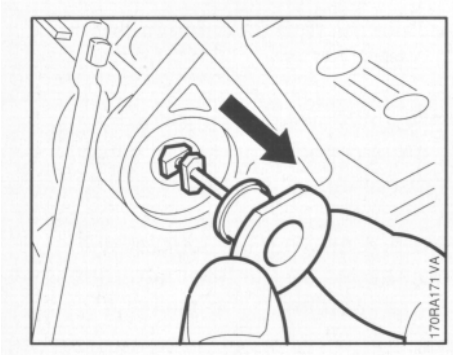


- Remove the top handle and pull out the throttle cable (1) and protective tube (2) with ground and short circuit wires at the same time.

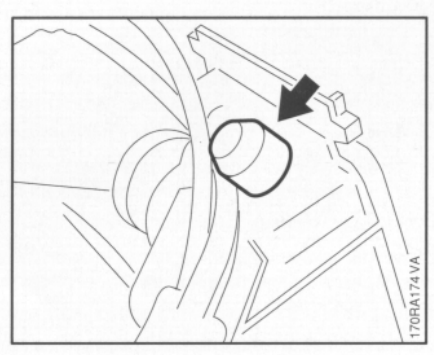


- Position the plug so that the front key (1) lines up with the slot in the inner plug.
- Push the plug in until you feel noticeable resistance.
- Now turn plug about 90 degrees (the rear key (2) then lines up with the slot) and push it home until it butts against the rubber buffer.

- Rotate the plug another 90 degrees.

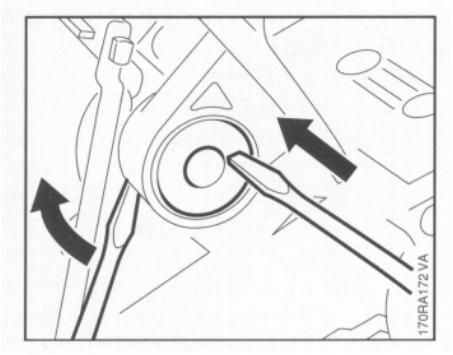


- Rotate plug (with key) approx. 90 degrees and take it out of the annular buffer.

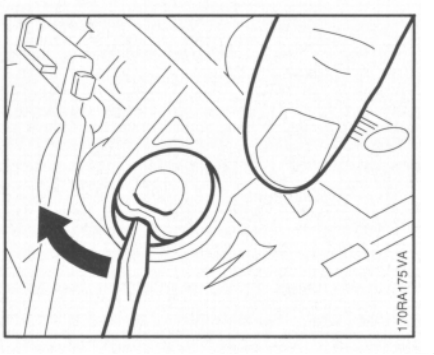


- Inspect rubber plug and replace if necessary.

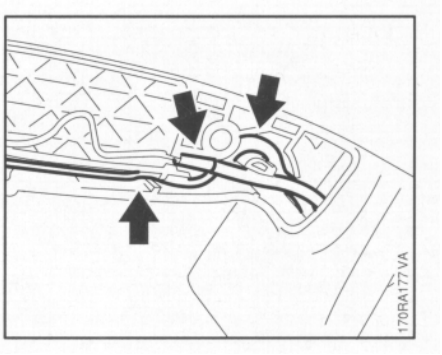
Install in the reverse sequence.



- Push the rubber buffer out of the top handle.



- Press the top handle against the rubber buffer.
- Pry the rubber buffer into the top handle.



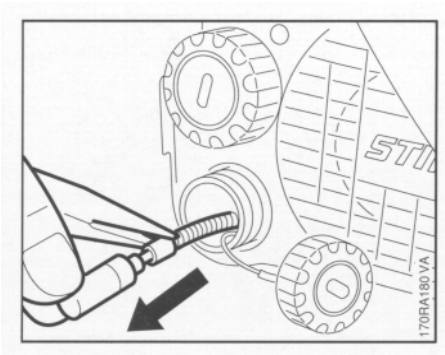
- Make sure ground wire, short circuit wire and throttle cable are correctly positioned in the top handle.

9. CHAIN LUBRICATION

9.1 Pickup Body

Impurities gradually clog the fine pores of the filter with minute particles of dirt. This prevents the oil pump from supplying sufficient oil to the bar and chain. In the event of problems with the oil supply system, first check the oil tank and the pickup body. Clean the oil tank if necessary.

Troubleshooting chart - see "General Servicing, Troubleshooting" handbook.



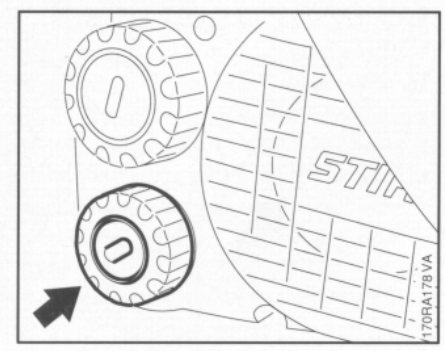
- Pull the pickup body out of the oil suction hose.

- Wash the pickup body in white spirit and, if possible, blow out with compressed air.

- Always replace a damaged pickup body.

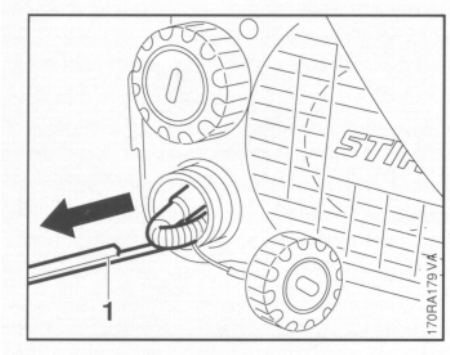
- Flush out the oil tank.

Assembly is a reversal of the disassembly sequence.



- Unscrew oil filler cap and drain the oil tank.

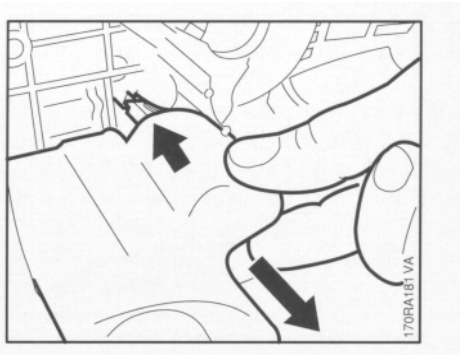
Note: Collect chain oil in a clean container or dispose of it properly at an approved disposal site.



- Use assembly hook (1) 5910 893 8800 to withdraw the pickup body from the oil tank.

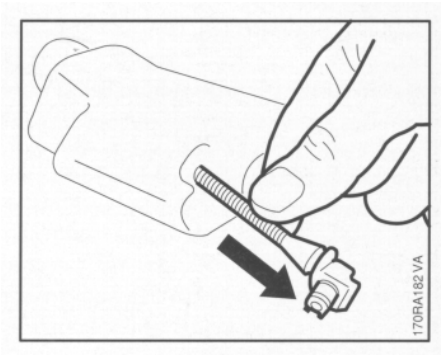
Note: Avoid stretching the oil hose.

9.2 Oil Tank/Suction Hose

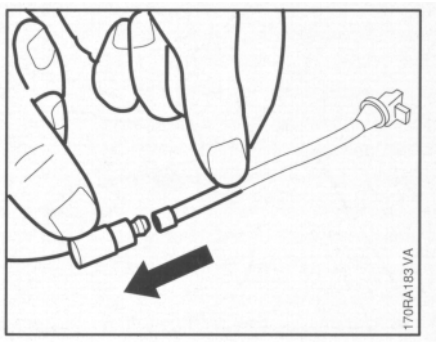


- Remove the engine - see 4.1.

- Pull out the oil tank and push the suction hose out of its seat at the same time.

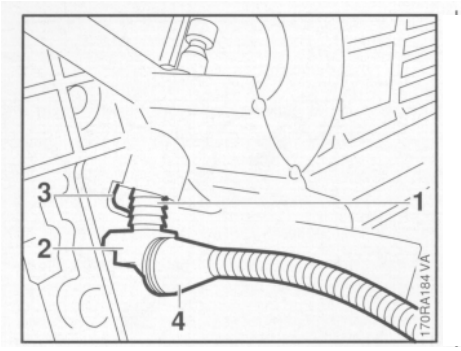


- Pull suction hose with pickup body out of the oil tank.



- Pull the pickup body out of the suction hose.

- Inspect the pickup body and clean or replace it as necessary.



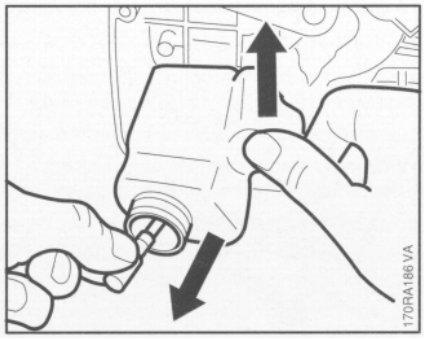
- Flush out the oil tank.

- Insert pickup body in the suction hose.

• Push stub (1) into oil pump seat.

Note: The straight face (2) must engage properly in the engine housing opening (3).

• Coat taper (4) with a little oil.



- Fit the oil tank in the engine housing.

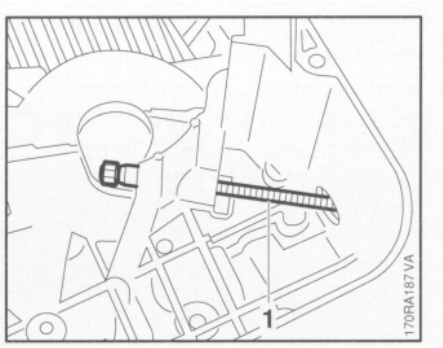
- Pull the pickup body out of the oil tank.

• Press the oil tank against the engine housing and pull the suction hose outwards at the same time (this pulls the taper into the oil tank).

Note: Avoid stretching the suction hose.

- Place the pickup body in the oil tank.

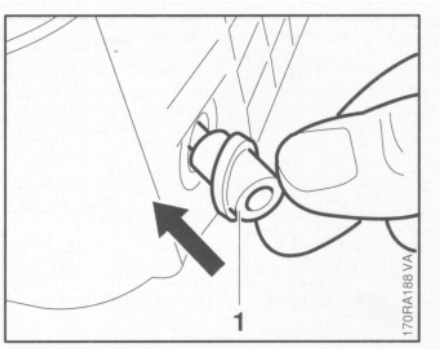
- Install the engine - see 4.2.



Removal:

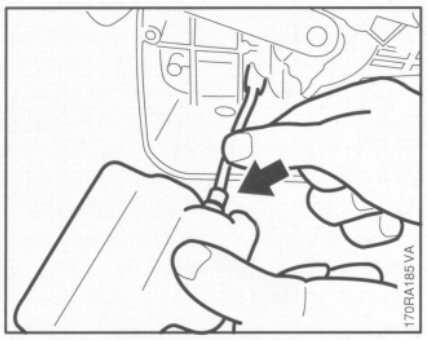
- Remove the oil tank - see 9.2.

• Screw the threaded rod (1) 1132 893 8200 into the oil pump.

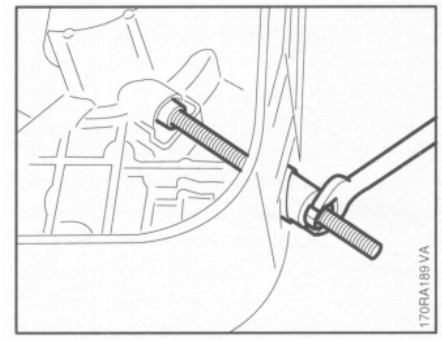


• Push the thrust piece (1) 1132 893 8700 over the threaded rod as far as it will go.

• Fit M5 nut.

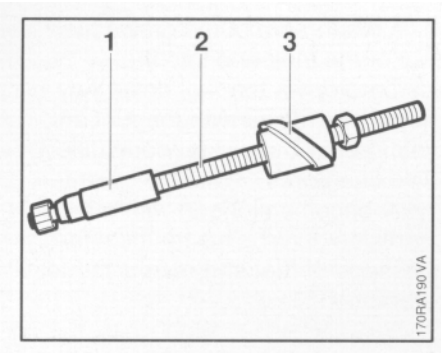


• Fit pickup body with suction hose in oil tank opening.

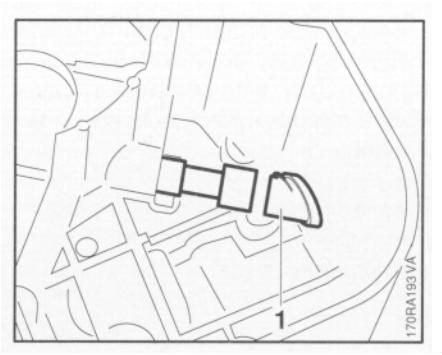


• Tighten down the nut until the oil pump comes out of the engine housing.

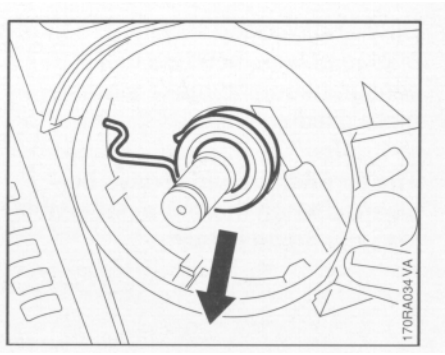
9.4 Worm



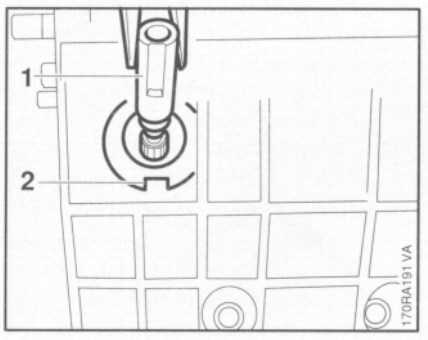
- Unscrew the oil pump (1) from the threaded rod (2).
- Pull the thrust piece (3) off the threaded rod.



- Position the thrust piece (1) 1132 893 8700 in the housing bore from the inside.

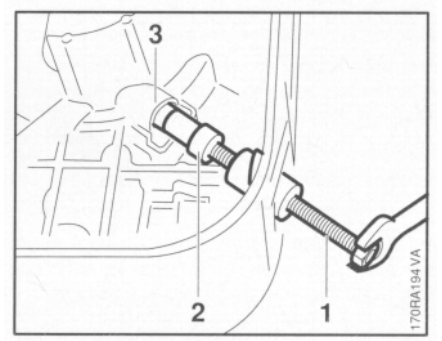


- Remove the clutch - see 3.2.
- Pull off the worm with drive spring.

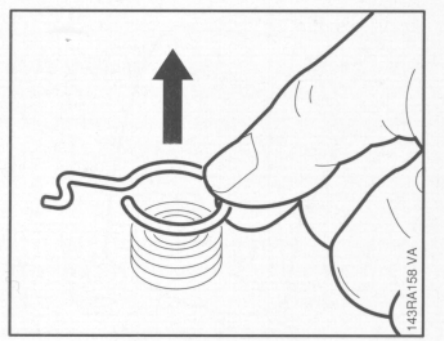


Installation:

- Place the oil pump in position so that the left edge (1) of the groove lines up with the left edge (2) of the mark.

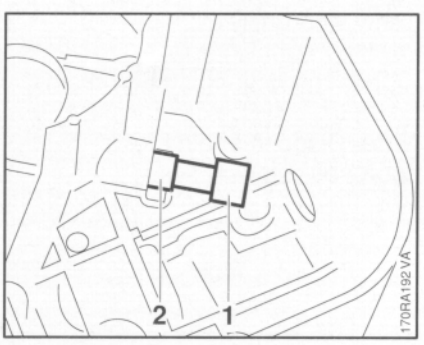


- Screw the hex. head screw (1) 9008 319 1450 into the thrust piece.
- Continue tightening the hex. head screw until the press arbor (2) butts against the housing (3).
- Take out the hex. head screw.
- Remove the thrust piece and press arbor.
- Install the oil tank - see 9.2.



- Take the drive spring off the worm.

Reassemble in the reverse sequence.



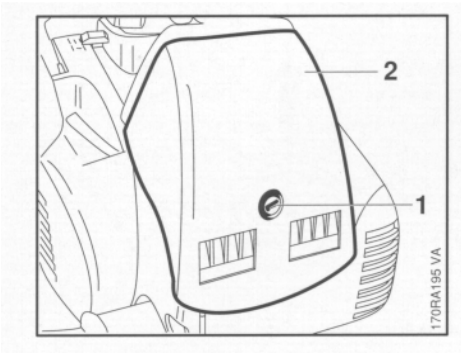
- Fit press arbor (1) 1132 893 7200 in the oil pump (2).

10. FUEL SYSTEM

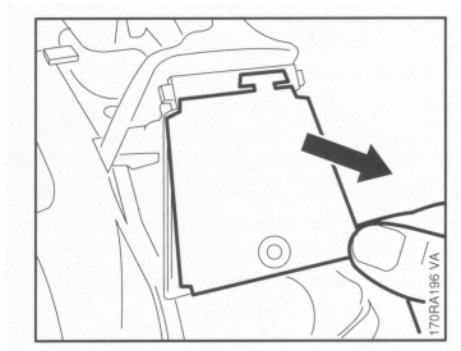
10.1 Air Filter

Dirty and clogged air filters reduce engine power, increase fuel consumption and make starting more difficult.

The air filter should always be cleaned when there is a noticeable loss of engine power.

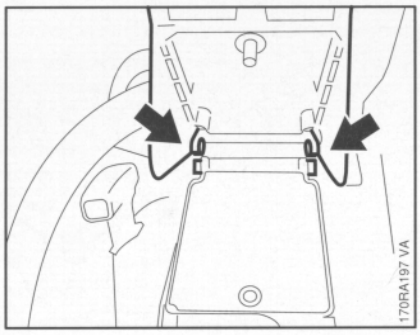


- Slacken off the screw (1).
- Swing the air filter cover (2) up and remove it from the lugs.



- Remove felt filter element.

- Fit a new felt filter element. Element may be knocked out or blown clear with compressed air as a temporary solution - **do not** wash.
- Install the felt filter element so that the web locates in the housing recess.

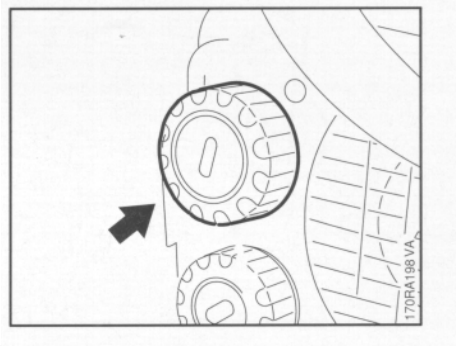


- Fit filter cover over the lugs.
- Swing the filter cover down.
- Tighten the screw.

10.2 Pickup Body

The diaphragm pump draws fuel out of the tank and into the carburetor via the fuel hose. Any impurities mixed with the fuel are retained by the pickup body (filter). The fine pores of the filter eventually become clogged with minute particles of dirt. This restricts the passage of fuel and results in fuel starvation.

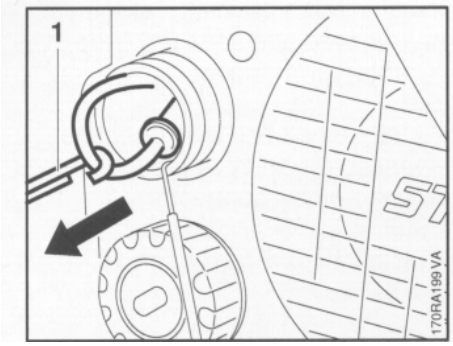
Important: In the event of trouble with the fuel supply system, always check the fuel tank and the pickup body first. Clean the fuel tank if necessary.



Cleaning the fuel tank

- Unscrew the filler cap and drain the tank.
- Pour a small amount of clean gasoline into the tank.
- Close the tank and shake the saw vigorously.
- Open the tank again and drain it.

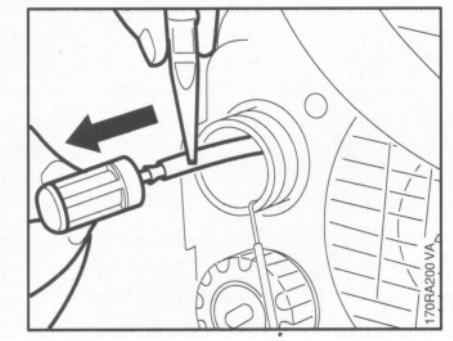
Note: Dispose of old fuel at approved disposal site.



Pickup body

- Use the assembly hook (1) 5910 893 8800 to pull the pickup body out of the fuel tank.

Note: Do not stretch the fuel hose while removing it.



- Pull the pickup body off the fuel hose.

- Fit a new pickup body.

Reassemble in the reverse sequence.

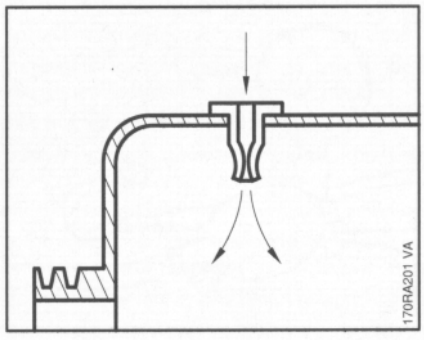
- Position pickup body so that it faces forward in the front corner (bar side).

10.3 Tank Vent

Correct operation of the carburetor is only possible if atmospheric pressure and internal fuel tank pressure are equal at all times. This is ensured by the tank vent.

Important: In the event of trouble with the carburetor or the fuel supply system, always check and clean the tank vent.

- Remove the engine - see 4.1.

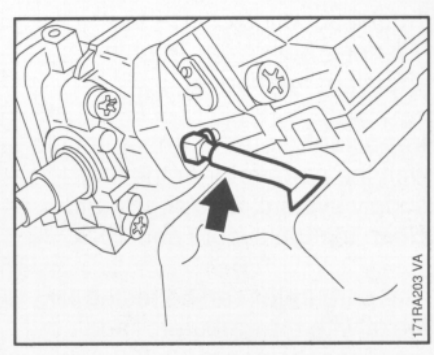


Equalization of pressure from the outside inwards takes place via the valve.

Note: Valve opening must be clear and clean.

- Install the engine - see 4.2.

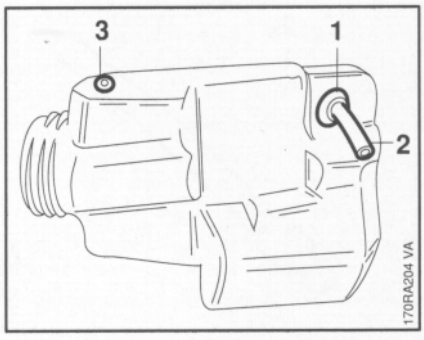
10.4 Fuel Tank/Fuel Hose



- Remove the engine - see 4.1.

- Pull fuel hose off carburetor elbow connector.

- Remove the fuel tank.



- Pull the pickup body off the fuel hose.

- Pry the grommet (1) out of the fuel tank.

- Pull out the fuel hose (2).

- Pull out the valve (3).

Install in the reverse sequence.

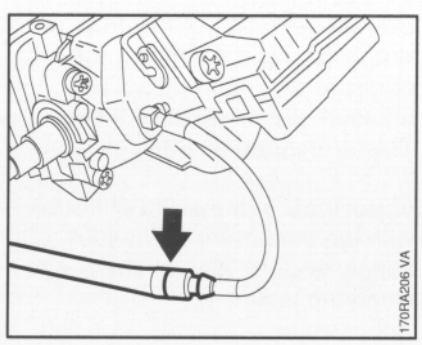
10.5 Carburetor
10.5.1 Leakage Test

Troubleshooting chart - see "General Servicing, Troubleshooting" handbook.

Important: In the event of trouble with the carburetor or the fuel supply system, also check and clean the tank vent - see 10.3.

The carburetor can be tested for leaks with the carburetor and crankcase tester 1106 850 2905.

- Remove the fuel tank - see 10.4.

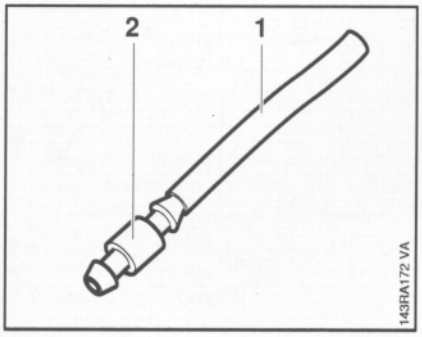


- Push the nipple into the tester's pressure hose.

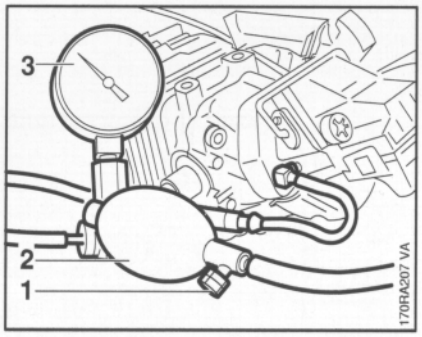
In either case the carburetor must be removed and serviced - see "Carburetor" handbook.

- After completing test, open the vent screw and pull the fuel line off the elbow connector.

- Install the fuel tank - see 10.4.



- Push the fuel line (1) 1110 141 8600 onto the nipple (2) 0000 855 9200.

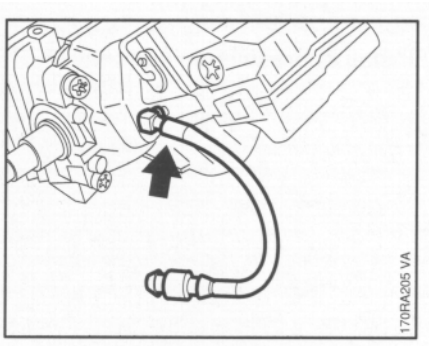


- Close the vent screw (1) on the rubber bulb (2) and pump air into the carburetor until the pressure gauge shows a reading of approx. 0.4 bar (5.8 psi).

If this pressure remains constant, the carburetor is airtight. However, if it drops, there are two possible causes:

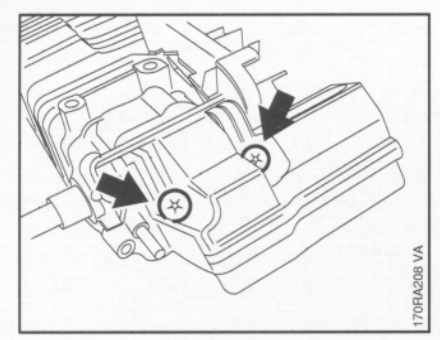
1. The inlet needle is not sealing (foreign matter in valve seat or sealing cone of inlet needle is damaged or inlet control lever sticking).

2. The metering diaphragm is damaged.



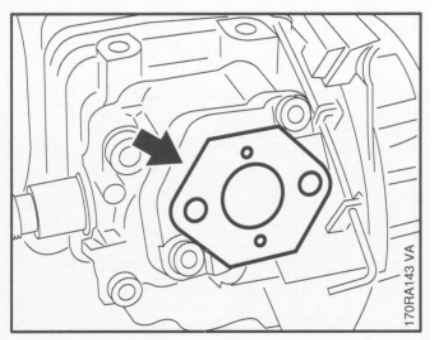
- Push fuel line with nipple onto carburetor elbow connector.

10.5.2 Removing and Installing



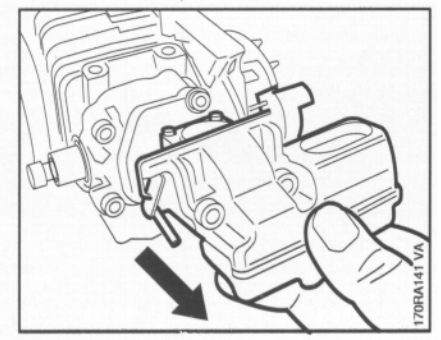
- Remove the fuel tank - see 10.4.

• Take out the screws.



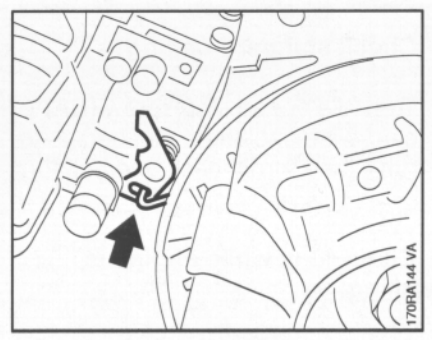
• Remove the gasket.

Install in the reverse sequence.



• Pull off the intake casing and carburetor.

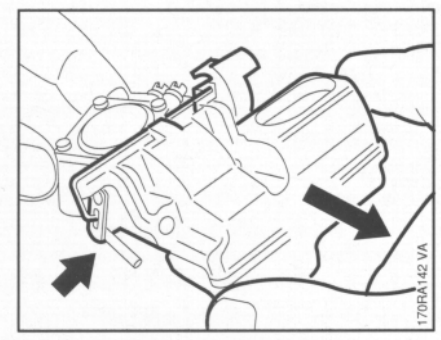
- Take out the screws.



- Fit a new gasket.

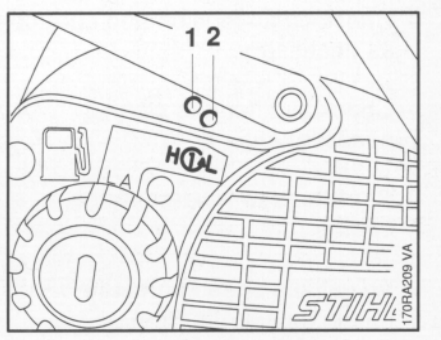
• Attach the throttle cable to the throttle shaft.

- Tighten down screws to 5.0 Nm (3.7 lbf.ft).



• Remove the intake casing and pull the choke rod out of the choke shaft at the same time.

10.5.3 Adjustment



Standard setting

To readjust the carburetor, start with the standard setting:

- Carefully screw down both adjusting screws until they are hard against their seats.

Then make the following adjustments:

H = Open high speed screw (1) 1 full turn
L = Open low speed screw (2) 1 full turn

A slight correction **may** be necessary if the saw is used at high altitudes (mountains) or at sea level.

For corrections to high speed screw **(H):**
Use a tachometer - do not exceed max. permissible engine speed. Engine can be damaged by lack of lubricant and overheating.

Maximum engine speed with bar and properly tensioned chain:
12,000 rpm

Note: If no tachometer is available, do not turn the high speed or low speed screws beyond the standard setting to make the mixture leaner.

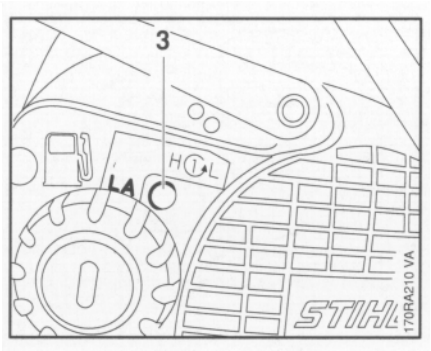
- Check chain tension and correct as necessary.
- Check air filter and clean if necessary.
- Start the saw - warm up the engine.
- Adjust idle speed correctly (chain must not rotate).

Turn high speed screw **(H)** clockwise for leaner mixture at high altitudes or counterclockwise for richer mixture at sea level.

Turn screws very slowly and carefully - even slight adjustments produce a noticeable change in engine running behavior.

Note the following when making corrections to high speed screw:

The setting of the high speed screw **(H)** affects the maximum off-load engine speed. If the setting is too lean, the maximum permissible engine speed will be exceeded and increase the risk of engine damage.



Adjusting idle speed

A correction at the low speed screw **(L)** usually necessitates a change in the setting of the idle speed screw **(LA)**.

Engine stops while idling:

Check standard setting

Turn idle speed stop screw **(LA)** clockwise until the chain begins to run - then turn it back one half turn.

Chain runs while engine is idling:

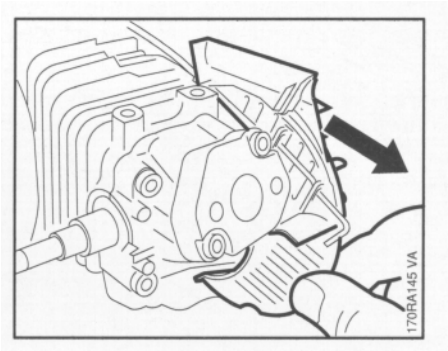
Check standard setting

Turn the idle speed stop screw **(LA)** counterclockwise until the chain stops running - and then turn it about another half turn in the same direction.

Erratic idling behavior, poor acceleration -
even though low speed screw is one turn open

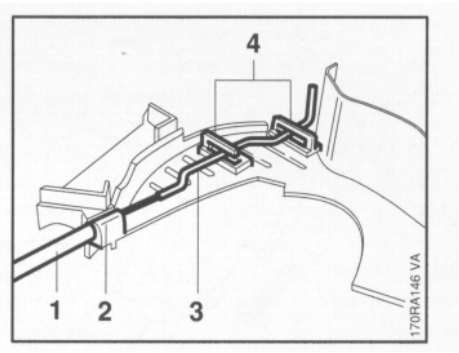
Idle setting too lean. Turn the low speed screw **(L)** counterclockwise until the engine runs and accelerates smoothly.

10.6 Throttle Cable



- Remove the carburetor - see 10.5.2.

• Remove the air baffle.



• Take the protective sleeve (1) out of its seat (2).

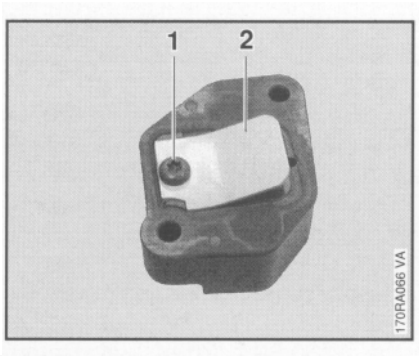
• Take the throttle cable (3) out of the retainers (4).

Install in the reverse sequence.

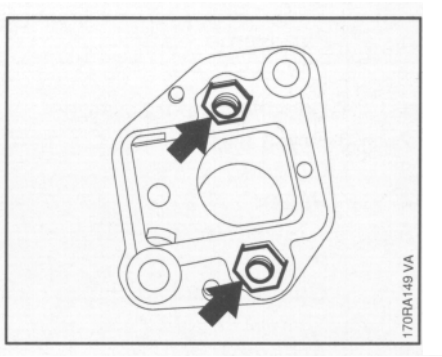
10.7 Spacer Flange/Diaphragm

A diaphragm valve is fitted on the spacer flange. It prevents gas flowing back in the direction of the carburetor.

- Remove the carburetor - see 10.5.2.



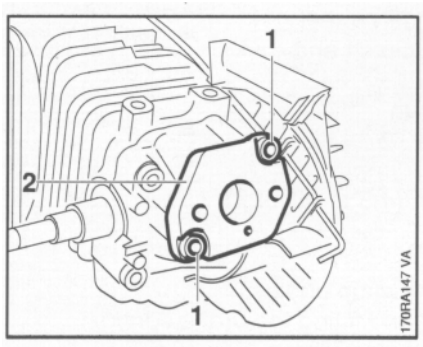
- Take out the screw (1).
- Remove the support plate (2).



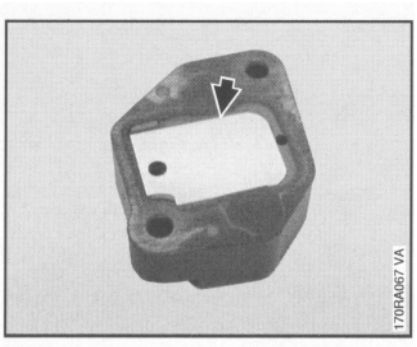
- Take out the nuts.

Reassemble in the reverse sequence.

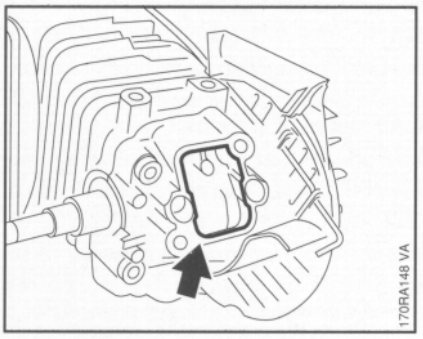
- Use a new gasket.
- Tighten down screw on support plate to 2.0 Nm (1.5 lbf.ft).
- Tighten down spacer flange mounting screws to 8.0 Nm (5.9 lbf.ft).



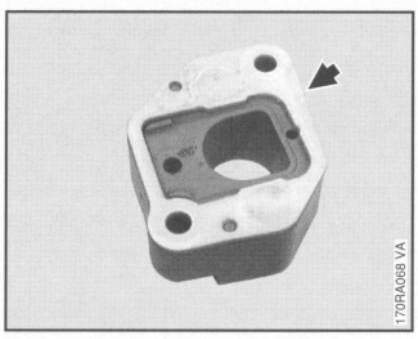
- Take out the screws (1).
- Remove the spacer flange (2).



- Remove the diaphragm.



- Seal the opening in the engine pan.



- Remove the gasket.

11. SPECIAL SERVICING TOOLS AND AIDS
11.1 Special Servicing Tools

No.	Part Name	Part No.	Application	Rem.
1	Locking strip for piston	0000 893 5903	Blocking crankshaft	
2	Press sleeve	1123 893 2400	Installing oil seal	
3	Guide	1123 894 7000	Guiding press sleeve (starter side)	
4	Puller	5910 890 4400	Removing oil seals	
5	- Jaws (No. 3.1 + 4)	0000 893 3706		
6	Puller	4133 893 0800	Removing flywheel	
7	Crimping tool	5910 890 8210	Attaching connectors to electrical wires	
8	Assembly drift	1130 893 4700	Removing and installing piston pin	
9	Carburetor and crankcase tester	1106 850 2905	Testing crankcase for leaks	
10	Vacuum pump	0000 850 3501	Testing crankcase for leaks	
11	- Nipple	0000 855 9200		
12	- Fuel line	1110 141 8600		
13	Sealing plate	0000 855 8106	Sealing exhaust port for leakage test	
14	Test flange	1128 850 4200	For leakage test	
15	Setting gauge	1111 890 6400	Setting air gap between ignition module and flywheel	
16	Socket, 13 mm	5910 893 5608	Removing clutch and flywheel nut	
17	Torque wrench	5910 890 0301	0.5 to 18 Nm (0.325 to 13.5 lbf.ft)	1)
		5910 890 0302		2)
18	Torque wrench	5910 890 0311	6 to 80 Nm (4.5 to 60 lbf.ft)	1)
		5910 890 0312		2)
19	Screwdriver bit T27x125	0812 542 2104	IS screws	
20	Assembly hook	5910 893 8800	Removing pickup bodies	
21	Assembly tool	1117 890 0900	Removing and fitting the brake spring	
22	Assembly tool	1116 893 4800	Installing rewind spring	
23	Stud puller	5910 893 0501	Removing and installing bar mounting stud	

No	Part Name	Part No.	Application	Rem.
24	Service tool	1132 890 1700	Removing and installing oil pump	
25	- Threaded rod	1132 893 8200		
26	- Thrust piece	1132 893 8700		
27	- Press arbor	1132 893 7200		
28	- Hex. head screw	9008 319 1450		
29	T-handle screwdriver QI-T27x150	5910 890 2400	For all IS screws	3)
30	Assembly stand	5910 890 3100	Holding saw for repairs	

Remarks:

1) Always use torque wrench to tighten Plastoform and DG screws.
2) Wrench has optical/acoustic signal.
3) On DG and P screws, use for releasing only.

11.2 Servicing Aids

No.	Part Name	Part No.	Application
1	Lubricating grease (370 g/13 oz tube)	0781 120 1111	Oil seals, oil pump drive, chain sprocket bearing, chain tensioner
2	Standard commercial, solvent-based degreasant without chlorinated or halogenated hydrocarbons		Cleaning crankshaft stub
3	STIHL special lubricant	0781 417 1315	Bearing bore in rope rotor, rewind spring in fan housing
4	Ignition lead HTR (10 m/33')	0000 930 2251	
5	Electrician's repair kit	0000 007 1013	
6	Dirko sealant (100 g/3.5 oz)	0783 830 2120	Engine pan, outside diameter of oil seals
7	Graphite grease		Peg on starter pawl
8	Molykote grease		Sliding and pivot points of brake band
9	STIHL Bioplus (1 l/2 US pt bottle)	0781 516 3331	Corrosion protection for brake band